

Old Masterpieces
IN SURGERY



ALFRED BROWN, M.D.

Pete & Holmes
Feb 24/37 "Save the Question"

Old Masterpieces
IN SURGERY

Old Masterpieces IN SURGERY

BEING

*A Collection of Thoughts
and Observations Engendered by a
Perusal of Some of
the Works of Our Forbears
in Surgery*

BY ALFRED BROWN, M. D.



Privately Printed
OMAHA, NEBRASKA
1928

COPYRIGHTED AS INDIVIDUAL ARTICLES

1924, 1925, 1926, 1927

BY THE SURGICAL PUBLISHING COMPANY

CHICAGO

REVISED AND COPYRIGHTED

IN BOOK FORM, 1928

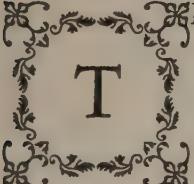
BY ALFRED BROWN, M.D.

THE LAKESIDE PRESS, R. R. DONNELLEY & SONS COMPANY, CHICAGO

"Les conditions requises au Chirurgien, sont quatre: la premiere est, qu'il soit lettré: la seconde, qu'il soit expert: la troisieme, qu'il soit ingeniens: la quatrieme, qu'il soit bien morigere. Il est donc requis en premiere lieu, que le Chirurgien soit lettré, non seulement ex principes de la Chirurgie, mais aussi de la Medecine, tant en theorique que en pratique."

GUY DE CHAULIAC

Foreword

HE material contained in this volume represents the result of effort extending over four years during which time an article appeared each month in Surgery, Gynecology and Obstetrics in a department of the Journal called the "Surgeons Library." The idea of adding these little essays upon the life and work of one of the more or less well-known old surgeons arose in the minds of the editors and with some trepidation I consented to try and fill the need. They were christened "Old Masterpieces in Surgery" by Dr. Kanavel.

No attempt has been made to make the articles complete treatises and they may be described as more or less random thoughts and observations, nothing more. I have not tried to give any detailed description of the additions which have been made to surgical science throughout the ages, for two reasons. The first, that the restricted space would not permit, and the second and still more important reason that such work has already been done by others far more capable than I, for I emphatically deny any pretense of being a medical or surgical historian.

The study of these old volumes of surgery has been not only an interesting, but also an enlightening task, particularly when applied in the attempt to follow the aims and ambitions of these ancient forbears of ours, to try and fathom their personalities; to recreate them, as it were, as living, breathing human beings, beset with their likes and dislikes, their enthusiasms for and their condemnations of this and that subject in which they were interested, their strengths and their weaknesses. To find oneself being led to the conclusion that after all, though they

lived in a different day and age, their professional lives were much like ours and their problems in the field of their science were similar to those with which we have to deal in the present day. The quacks and cults were there to contend with then as now and their success in the strife, when the ultimate result is balanced was about the same as ours of the present. From their experience and ours we are forced to the conclusion that the most important elements in the cure of charlatanism are time and education. Results tell the story. The regular physician, incompetent for any reason, finding himself unable to compete with his brother physician in the ethical field, through force of economic pressure, renounces decent medicine and resorts to quackery where he may trade upon the credulity and ignorance of his fellow man and thus eke out an existence which otherwise he could not obtain because of his unfitness. As his opposite the outstanding brilliant man who finds himself by circumstance enrolled in the lesser or irregular profession sooner or later improves as the result of his own effort and obtains the proficiency necessary to pass into the higher realm. Thus he becomes a true scientist and, in some instances, that of Paré for example, is looked upon eventually as one of the most brilliant men of his generation.

Let me offer one word of advice to anyone studying these old books. It is to read the preface of the volume under consideration. To me this is one of the most interesting parts of the book. By preface I mean the preamble, including everything up to the subject matter of the book. This in many instances consists of several parts; there may be a dedicatory epistle, addressed to some great nobleman; a letter to the reader or student; another epistle to the author's fellow surgeons; and occasionally a series of notes or poems by the author's friends, addressed to and in praise of him and wishing him success in his undertaking. In these intro-

dictory remarks the author comes into the most intimate contact with the reader and unburdens his soul, giving, in some instances his object in writing the book and sometimes the circumstances under which it was written. He is apt also to discuss his relations to his profession and his professional brethren, or tell of his aims and ideals. Many of the deductions concerning the individuality and character of these men I have drawn from material gathered from these prefaces. They are my interpretation only, and may or may not be correct; it is purely a matter of opinion.

The historical data in these articles have been obtained from sources which are considered authoritative. I have not given references in individual instances. To me the book which is burdened with innumerable notes at the bottom of the page, printed in small type, is rather difficult to read as the train of thought is interrupted so frequently that it is hard to keep the main idea in mind. Such notes are invaluable in a reference book but I have not planned to produce a volume of that type. Consequently the notes and references have been omitted. I have, however, freely consulted numerous authorities and in cases where they differ I have inserted the version which to me has appeared the most reasonable. The data given have been obtained from any source to which I could find access. I have used constantly Gurlt, Baas, Garrison, Choulant, Daremburg, Le-Clerc, the Encyclopedia Britannica and other books devoted to historical detail and I wish here to acknowledge the great assistance they have been to me and disclaim any attempt to pose as an original worker in source material.

I have, of necessity, made the translations of foreign languages rather free but in all instances I have tried to retain and express what, to me, was the thought of the author. The French, German, Latin, Italian and Greek of bygone years are

Foreword

somewhat difficult at times, particularly as I have only modern dictionaries to consult. If mistakes are found, and without doubt there are many, please attribute them to ignorance of the language and not to willful intent to distort the author's ideas.

I wish to acknowledge with hearty thanks the help without which these articles could never have been written; to the editors of *Surgery, Gynecology and Obstetrics*, especially Dr. Allen B. Kanavel for persuading me to undertake their production; to Mr. Ballou and Miss Spencer of the staff of the Surgical Publishing Company for ever kindly cooperation and aid and at times, I must confess, patient forbearance with a somewhat busy man, who occasionally proved to be a tardy and I fear, worrisome contributor; to Mr. J. Christian Bay of the John Crerar Library, Chicago; Dr. LeRoy Crummer, Omaha; Dr. Harvey Cushing, Boston; Dr. J. L. Miller, Thomas, West Virginia; The Library of the Medical College of the University of Nebraska, Omaha; Dr. A. S. W. Rosenbach of the Rosenbach Co., Philadelphia; and William Wood and Company, New York for so kindly placing at my disposal their books in order that I might study them; and to the publishers of *Surgery, Gynecology and Obstetrics* for allowing me to use the plates which they had made for the individual articles.

It is my hope that these little essays may play a part, small though it may be, in arousing in those who read them a greater pride in the surgical profession to which the majority of the readers will, I believe, have the honor to belong and stimulate in them a desire to possess a more complete knowledge of the early days of our science. If this result is achieved I shall be content.

ALFRED BROWN.

Omaha, Nebraska.

April 15, 1928.

Table of Contents

	PAGE
Soranus of Ephesus, The Introduction to the Art of Healing	2
The Seventeen Books of Oribasius of Sardis	8
The Twelve Books of Medicine of Alexander of Tralles .	12
Paulus of Aegina, The Collection of the Pleiades	18
The Surgery of Albucasis	24
The Royal Book of Haly Filius Abbas	28
Trotula, The Diseases of Women	34
Constantinus Africanus	38
Roger of Salerno	44
The Surgery of Roland of Parma	50
The Surgery of John Arderne	54
The Surgery of Hieronymus Brunschwig	58
Hans von Gerssdorff, The Field Book of the Treatment of Wounds	64
Jacob Berengarius of Carpi, Concerning Fracture of the Skull	68
A Rosegarden for Pregnant Women and Midwives	74
The Byrth of Mankynde	78
The Obstetrics Booklet of Rueff	84
The Surgery of John de Vigo	88
The Great Wound Surgery of Paracelsus	94

Table of Contents

	PAGE
The Surgery of Guido Guidi	98
The Aldine Edition of the Collected Works of the Ancient Medical Writers	104
The Surgery of Jean Tagault	108
The Seven Books of Surgery of Vesalius	114
The Ten Books of Surgery of Ambroise Paré	118
Pierre Franco, The Surgery of Hernia	124
The French Surgery of Dalechamps	128
The Pharmacopoeia and Garden of Military Surgery	134
The French Surgery of Guillemeau	138
Leonardo Botallo, The Cure of Gunshot Wounds	144
The Surgery of Giovanni Andrea Dalla Croce	148
Lithotomy and the Lithotomists	154
The Augendienst of George Bartisch	164
The Plastic Surgery of Tagliacozzi	168
The Six Books of Hieronymus Mercurialis	174
The Anatomy of Realodus Columbus	178
The Medical Dictionary of Henricus Stephanus	184
Hieronymus Fabricius of Acquapendente, The Pentateuch and Operations of Surgery	188
The Surgions Directorie of Thomas Vicary	194
Certaine Workes of Chirurgie by Thomas Gale	200
William Bullein's Bulwarke of Defense and Dialogue	204
Banister's Anatomy	210

Table of Contents

xiii

PAGE

The Gunpowder Surgery of William Clowes	216
Peter Lowe, A Discourse of the Whole Art of Surgery	220
Harvey's Circulation of the Blood	226
John Moyle, The Abstract of Sea Surgery	230
John Colbatch's New Light on Surgery	236
Cheselden's Anatomy of the Human Body	242
The Course in Operative Surgery of Pierre Dionis	248

List of Illustrations

	PAGE
First Page of Soranus' Work from The Aldine Collection of Ancient Medicine, <i>Venice</i> , 1547	1
Title Page of the Aldine Edition of the Works of Ori- basius of Sardis, <i>Paris</i> , 1555	7
Title Page of Jerome Scotus' Edition of the Twelve Books of Medicine of Alexander of Tralles, <i>Venice</i> , 1555 . .	11
Colophon of the same book	14
Title Page of the 1542 Edition of the Works of Paulus of Aegina by Wendelin Rihelius	17
A Page of Instruments from Albucasis' Surgery; Bonetus Locatellus for Oct. Scotus' heirs, <i>Venice</i> , 1500 . . .	23
Title Page of the Capella translation of the Al Maleki of Haly Abbas, 1523	27
First Page of the Work of Trotula of Salerno, from the Aldine Collection of Ancient Medicine, <i>Venice</i> , 1547 .	33
First Page of the Work of Constantinus Africanus from the Collectio Chirurgica Veneta, Henricus Petrus, <i>Basle</i> , 1541	37
A Page from a thirteenth century manuscript of the works of Roger of Salerno	43
A Page of the Work of Roland of Parma, showing cranial instruments. From the Collectio Chirurgica Veneta; Henricus Petrus, <i>Basle</i> , 1541	49
Part of the Stockholm MSS. of the Work of John Arderne	53
Title Page of the English Edition of Brunschwig's Sur- gery— <i>Southwark</i> , Peter Treveris, 1525	59

List of Illustrations

	PAGE
Title Page of Gerssdorff's Fieldbook of Surgery, <i>Strassburg</i> , Joann Schott, 1517	63
Pages from Berengarius' Fractures of the Skull, <i>Leyden</i> , Joann Maire, 1629	69
Pages from Roesslin's Rosegarden, 1513	73
Pages from the First Raynold Edition of the Byrth of Mankynde, 1545	79
Pages from the 1587 Edition of The Obstetrics Booklet of Rueff	83
Title Page of Traheron's English Translation of John de Vigo's Surgery, 1550	89
Page from the Great Wound Surgery of Paracelsus, 1536, showing the firing of a cannon	93
Illustrations from the Surgery of Guido Guidi adapted from Oribasius of Sardis	99
Title Page of the Aldine Edition of the Collected Works of the Ancient Medical Writers, <i>Venice</i> , 1547	103
Title Page of Tagault's Surgery, <i>Paris</i> , Christian Wechel, 1543	109
Pages from the Seven Books of Surgery of Vesalius, <i>Venice</i> , Valgrisius, 1569	113
Pages from the Ten Books of Surgery of Ambroise Paré	119
Pages from The Treatise on Hernia by Pierre Franco, <i>Lyon</i> , Thibauld Payan, 1561	123
Pages from The French Surgery of Dalechamps, <i>Lyon</i> , Guillaume Rouille, 1570	129
Pages from The Pharmacopoeia and Garden of Military Surgery by Esaie le Lievre, Robert Coulombel, <i>Paris</i> , 1583	133

List of Illustrations

xvii

PAGE

Title Page of the French Surgery of Guillemeau, <i>Paris</i> , 1594	139
Pages from The Cure of Gunshot Wounds by Leonardo Botallo, <i>Guilielmus Rouillius, Venice</i> , 1560	143
Title Page of the Surgery of Giovanni Andrea Dalla Croce, Giordano Ziletti, <i>Vinegia</i> , 1574	149
Frère Jacques de Beaulieu in His Hermitage	153
Portrait of Philippe Collot	154
Portrait of Frère Jacques de Beaulieu	156
An Operation by Frère Jacques	159
A Lithotomy Card	162
Pages from The Augendienst of George Bartisch	163
Pages from The Plastic Surgery of Tagliacozzi, Gaspar Binonis, <i>Venice</i> , 1597	169
Title Page of The Six Books of Hieronymus Mercurialis, Nicolas Nivellius, <i>Paris</i> , 1585	173
Title Page of The Anatomy of Realdus Columbus, Nicolas Bevilacqua, <i>Venice</i> , 1559	179
Title Page of The Medical Dictionary of Henricus Steph- anus (Henri Estienne), Huldrich Fugger, 1564	183
Pages of Instruments from The Pentateuch and Opera- tions of Surgery of Hieronymus Fabricius of Acqua- pendente, Joh. Hartmann Beyer, <i>Frankfort</i> , 1592	189
Title Page of The Surgions Directorie of Thomas Vicary, T. Fawcet, <i>London</i> , 1651	193
Tables of Luxations and Fractures from Certaine Workes of Surgery by Thomas Gale, Thomas East, <i>London</i> , 1586	199

List of Illustrations

	PAGE
Pages from William Bullein's <i>Bulwarke of Defence and Dialogue</i> , Thomas Marshe, <i>London</i> , 1579	205
Title Page of Banister's <i>Anatomy</i> , John Day, <i>London</i> , 1578	209
The Surgery Chest from The Gunpowder Surgery of William Clowes, Edm. Bollifant for Thomas Dawson, <i>London</i> , 1596	215
Pages from Lowe's <i>Surgery and Presages of the Divine Hippocrates</i> , R. Hodgkinsonne, <i>London</i> , 1654-55	221
Title Page of Harvey's <i>De Motu Cordis</i> , Guilielmus Fitzerus, <i>Frankfort</i> , 1628	225
Title Page of John Moyle's <i>Abstract of Sea Surgery</i> , J. Richardson for Tho. Passinger, <i>London</i> , 1686	231
Title Page of Colbatch's <i>New Light of Surgery</i> , D. Brown, <i>London</i> , 1695	235
Title Page of Colbatch's <i>New Light of Surgery Vindicated</i> , D. Brown, <i>London</i> , 1695	239
Frontispiece of Cheselden's <i>Anatomy</i>	241
Title Page of Cheselden's <i>Anatomy of the Human Body</i> , William Bowyer, <i>London</i> , 1712 (?)	245
Title Page of Dionis' <i>Course of Surgical Operations</i> , Jacob Tonson, <i>London</i> , 1710	248
The Amphitheatre at St. Côme	252

S O R A N I E P H E S I I I N S I G N I S
P E R I P A T E T I C I , E T V E T V S T I S S I M I A R-
C H I A T R I I N A R T E M M E D E N D I
I S A G O G E S A L V B E R R I M A .

Tyro medice artis qualis esse oporteat. Caput 1.



S T V T I A veterum in opusculis librorum diuersa posuit principia: Nos tamen principium sumimus ab eo qui imbuī arti medicinę inchoat. Sit autem cratē quidem illa, ex qua maxime e' paruis homines transeunt ad magnitudinem, quod est in annos undecim. Hęc enim etas est apta ad sumendam sanctam artem medicinę: corporis autem magnitudinem talem habeat, ut neque pinguis sit neque breuis admodum: & ut iuuentutem liberaliter agat, & senectutem utilem atque facilem ducat: natura & animo sit studiosus, & ingeniosus quidem & acutus, ut citius intelligat, & docibilis sit: fortis autem, ut possit per diem labores sustinere: quoniam undique horrenda & tāquam infusoria, & alienos casus suas facit esse trifistis. Disciplinarum autem, & virtutum ceterarum, minime sit expers. sed & circa mores habeat diligentiam: iuxta enim Erasistratum, felicissimum quidem est, ubi utrque res conueniunt, ubi & in arte sit perfectus, & moribus sit optimus. Si autem unum de duobus defuerit, melius etiam uidetur, esse bonum, quām artificem perfectum, mores habentem malos, & improbum esse: modelli siquidem mores quod in arte deest, honestate repensare uidentur. Culpa autem morum, artem perfectam corrumpere atque improbabre potest. Necnon & naturę rerum scientiam habeat, ut omnino huius rei non expers esse uideatur. His igitur omnibus ornatus esse debet, qui medicinę tam arduam artem auspiciaturus est.

De iuramento medici. Cap. 11.

C V R A R E etiam debet, qui artem medicam, & naturę scientiam uult inchoare, ne ab errore quenquam aliquius iżdat effectus. Ea itaque ratione per sacramentum iuramenti sumat doctrinam, Grāmaticam, Rhetoriam, Arithmeticam. Alstrorum quoque ratio sumenda est, ut cognoscat eorum ortus, & occasus & motus, & tempora anni: quia cum ipsis & nostra corpora permuntantur, & eorum mobilitate & perturbatione zgritudines in hominibus commouentur.

Qualis esse debet medicus. Cap. 111.

P E R S P I C I A M V S autem qualem oporteat esse medicum. Sit ergo moribus ornatus & modestus, cum decenti ac debita honestate, nec desit ei sanctitas, nec sit superbus, sed pauperes & diuites, seruos & liberos pariter curerit. Vna enim apud omnes est medicina. Mercedes autem siquidem dē tur, accipiantur & non recusentur: si autem non dentur, non exigantur, quia quantum quisque dederit, non potest ulla exēquare mercede beneficia medicinę. Domos autem quas ingreditur, ita ingrediatur, ut ante oculos habeat curam tantummodo laborantis. Memor etiam sit iuramenti Hippocratis, ut ab omni culpa se abstineat, maxime à uenerio & corruptibili actu. Ea quæ in domibus aguntur & dicuntur, tanquam mysteria celanda exsistent. Sic enim sibi & arti ampliorē laudem acquirat. Habeat etiam digitorum elegantiam & subtilitatem, ut suauis omnibus uideatur, & in tangendo subtilior appareat: hac enim & ipse Hippocrates dixit. Nihilominus autem sit & in fabulis iucundus, & non sit expers philosophia. Sit etiam modestus moribus, ut utrque res conuenient simul sibi, cum artis perfectione, quantum possibile est, & bonitas morum.

Quod operatio, medici peritiam aut imperitiam prodit. Cap. 1111.

F A C I A M V S autem initium à quodam exemplo. Communiter contendunt & luctantur homines, cum aliqua necessitas impulerit, & qui didicerunt, & qui non studierunt: sed statim ipsis moribus comprobantur hi qui didicerunt, maxime si facere non recusat. Simili modo medicinam quamplurimi tractant. Denique aut succum p̄fisiā, aut melicratōn, & qui non sunt medici, dare possunt (quoniam ipsa natura interdum indocet etiam peritorum tribut efficaciam) Sed ipsa operatio, & ipsius rei honesta tractatio longe in eo apparet qui peritus est, & facile improbat imperitum. Hippocrates quoque ait: Medici quidem fama multi, sed opere ualde pauci. Honeste autem opus ipsum tractabitur tribus modis, ut pr̄scientes scilicet eorum causas qui omnino à uitij oppressi sunt, & nullo modo curari possunt, minime suscipiamus. Aut eos suscipiamus in quibus ualida natura non nimis est precipitata humoribus: aut ea quæ facimus, eo ordine faciamus, ut ad solam utilitatem, totam operis efficaciam diri-



Soranus of Ephesus, The Introduction to the Art of Healing

THE golden age of Grecian medicine and surgery lies in the few centuries between Hippocrates living in the fifth century b.c. and the second century of the Christian era, when Galen flourished and, in spite of all the good he did, broke down the Hippocratic method of utilizing clinical observation as the basis of medicine, and substituted in its stead abstract reasoning as more important than concrete fact. During this period it was the common thing for the physicians to write commentaries on the works of Hippocrates, in some cases amplifying them more or less by the addition of their own ideas, in others only changing the text a bit. Through the efforts of Aristotle the Alexandrian Library and the Alexandrian School had been founded and human dissection had been permitted by Alexander of Macedonia and his successors the Ptolemies. Grecian medicine had absorbed this and so improved.

Preceding Galen by about twenty years Soranus of Ephesus practised medicine and surgery. He was born at Ephesus from which he took his name to distinguish him from several others of the same given name, Soranus. He studied probably at Alex-

Old Masterpieces in Surgery

andria which was then the Mecca of all who wished to study science. Later he went to Rome where he practised during the reigns of Trajan (A.D. 98-117) and Hadrian (A.D. 117-138). At one time he also lived in Aquitania where he treated with some success, leprosy, which was there prevalent. For the most part, however, he devoted himself to obstetrics and gynecology and the greatest amount of his writing is on these subjects. He was a member of the so-called Methodist School. Many of his works remained unknown for centuries and it was not until 1838 that F. R. Dietz discovered his work entitled "Concerning the Diseases of Women." I have not as yet had the opportunity to examine this work, and I have seen only excerpts from the later editions by Ermerins (1862), Rose (1882) and Lueneberg (1894). Another work "Concerning the Symptoms of Fractures" is contained in the collection of Niketas, edited by Ant. Cocchi, Florence, 1754. This also I have not had the opportunity to examine.

In the Aldine Collection of Ancient Medicine, Venice, 1547, there is, tucked away in the center of the book, a short tract of eleven pages which purports to be by Soranus, and bears the title, "The Most Profitable Introduction to the Art of Healing of Soranus of Ephesus, Famous Peripatetic and Ancient Chief Physician." This is, of course, a translation, as Soranus wrote in Greek. Nothing is stated as to the identity of the translator, so it seems fair to assume it was by one of the Aldine editors and probably is a fairly accurate portrayal of Soranus' views. In it Soranus first takes up a few of the doctrines of the humors of the body in relation to seasons of the year, discusses pain in the chest, disturbances of the stomach, diseases of the bladder, the symptoms of stone, and several other conditions. Finally he discusses briefly obstetrics. The first paragraph is entitled

"concerning conception and coagulation of the seed." In the latter part of this he gives his idea of the number seven as being the most important factor in human life. He then goes on to discuss the development of the embryo.

One of the most interesting parts of the tract is the preface, which deals with the study of medicine. He says:

"Who were the first founders of Medicine? Apollo, indeed, invented medicine, Aesculapius amplified it, Hippocrates perfected it. It is necessary that I accept him as the leader of men and the judge of all cases and questions, as the parent and inventor of all good works, through whom logic, according to reason, has descended to us, just as doctrine has been made visible to us so that through it those who are introduced to medicine, by the Greeks called *eισαγόμενος*, may become better and more authoritative. And, therefore, to those beginning to learn the art of medicine, let me explain the best manner of teaching, and the right age to begin, and then let me speak about study and its forms, then of art, and finally of the art of medicine especially. You will learn in four kinds of aphorisms: intellectual, connective, divisible, and definitive. That one is called intellectual which with intellect, that is, with contemplation, follows up and considers the afflictions of both men and women; connective, which surrounds everything, that is, draws everything together and leaves nothing untouched; divisible, which divides the human body into parts and declares the afflictions of each one particularly; definitive, which defines the whole and lets it be determined correctly. We will use the definitive more in this work (provided we are not banished by others), because this is the best way of beginning. And the whole briefly defines the remainder, and determines it correctly; it leaves nothing from which it could, as it were, retract.

Old Masterpieces in Surgery

However, lest the mind of the reader advance incautiously and judge the remainder of the work, let it not be concealed of which type is the writing which the preface precedes, which, indeed, should have a brief introduction. It is indeed double, partly concerning him who receives the art, partly about the art itself. Let me, imitating Plato, join together the things which follow, for Plato says, concerning all who are beginning a profession, that he can learn who has skill in those things concerning which he asks."

Operative obstetrics was not unknown to Soranus for he speaks of version performed either by head or feet and says that it may be performed and a viable child be obtained. He also gives directions as to the care of the child during the early months of life and advises against weaning before the sixth month when it should be fed on milk and eggs.

Operative gynecology held no terrors for Soranus if one may judge from the portion of the Ermerins Latin translation which deals with prolapse of the uterus. After describing how the prolapsed uterus may become ulcerated and even necrotic, and remedies toward the cure of the ulcer failing, he says: "the blackened portion is to be resected in the same way as we resect a lobe of the liver or lung which has become necrotic from prolapse. But if the entire uterus has become bad, the whole is to be resected, not only upon the authority of those, of whom we have made mention above, who assert this can be done without danger but also because that part which has become bad is no longer of value, but is a foreign substance, not proper (to the body). Wherefore if from frequent prolapse the ulcerated uterus, which some affirm to be fallen out, has adhered to the alae of the pudendum, it is necessary to divide the adhesions in the same manner as (those) of the intestines to the peritoneum."

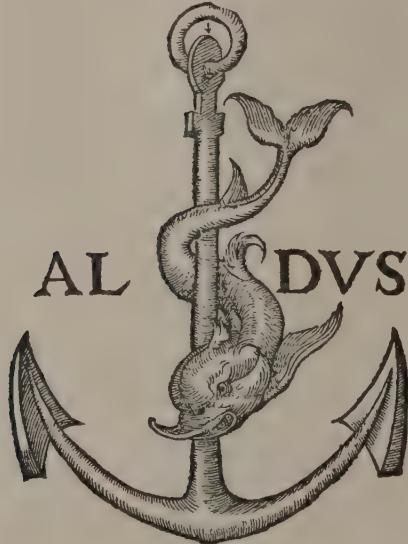
The book was evidently written for the benefit of midwives, for very little if any obstetric manipulation was actually done by the physician at this period. This and the other works of Soranus establish his standing as a clear observer and an excellent teacher, at least, of technique, even if he did not perform the manipulations he advises, though one may be permitted to doubt if the midwives carried out the operations he describes in the operative gynecology.

ORIBASII SAR-
DIANI COLLECTO-
rum Medicinalium,

LIBRI XVII.

QVI EX MAGNO SEPTVAGINTA
librorum volumine ad nostram etatem soli peruererunt.

Ioanne Baptista Rasatio, medico, Nova-
riensi, interprete.



PARISIIS.

Apud Bernardinum Turrisanum, via Iacobea, sub
officina Aldina.

1555.

TITLE PAGE



The Seventeen Books of Oribasius of Sardis

FOUR names stand out above all others as representing the best there was in the medicine and surgery of the Byzantine period. Oribasius, of the fourth century A.D.; Alexander of Tralles, and Aetius of Amida of the sixth century; and Paulus of Aegina, of the seventh century. Oribasius of Sardis or Pergamus was the earliest of the group. He was born in 325 A.D., in Pergamus, a city of Mysia, situated on the shore of the Aegean Sea and noted as the birthplace of his great medical predecessor Claudius Galen, one of the greatest physicians of all time. He obtained a good early education at home, but not being content with what he could obtain in Pergamus, went to Alexandria and there studied under the learned Zeno, of Cyprus. As Oribasius was of noble birth and also gained considerable reputation as a brilliant student he came under the notice of Julian whom he met after he had completed his education at Alexandria and had gone to Athens. Being rather prominent and somewhat powerful politically he helped Julian the Apostate to gain the throne of the Caesars and in return was appointed Quaestor of Constantinople. Julian's reign was short, lasting

only from 361 to 363, and during this short period Oribasius did most of his writing. At Julian's request he wrote a compendium of the works of Galen which has been lost. He also wrote the "Collectanea Medicinalia" which consisted of 70 books. Of these, 25 have been preserved, but the volume here illustrated contains but 17.

Oribasius' prominence, depending as it did upon the favor of the emperor, was short lived. Julian planned and executed a campaign into Persia and Oribasius accompanied him as physician in ordinary, thus receiving some experience in surgery of war. Julian, however, was wounded and Oribasius was unable to cure him. After Julian's death the new authorities promptly, as was the custom, took away Oribasius' property and banished him among the barbarians, probably the Goths. He rapidly attained a great reputation as a physician and evidently became so prominent that his own country desired his return, for shortly afterward he was brought back to Constantinople where he lived until his death in 403 A.D.

Though after his return to Byzantium, Oribasius wrote a few small treatises both for the medical and lay public, his greatest work was the *Ιατρικαὶ συναγωγαὶ* or Medical Collection. It was written in Greek; but shortly after it was printed in the original, Latin became the language of medicine, and it was naturally translated into that tongue. The volume illustrated here contains 17 of the original 70 books, which the translator, John Baptist Rasarius, states are all that are extant. The books are not in order for those from the fifteenth to the twenty-fourth are missing and the volume includes the twenty-fourth and twenty-fifth books. As the title page shows, it was printed in Paris by Bernard Turrisanus at the Aldine press and bears the famous Aldine anchor and dolphin.

Oribasius was a compiler and follower of his predecessors in medicine and does not pretend to be anything else. He had evidently read carefully the works of these older men and his object in writing the treatise was to explain their ideas in simple terms. In every instance he gives credit to his authority and his list is too long to mention here, but his constant reference to Galen, Antyllus and Rufus of Ephesus is worthy of mention. The books or chapters most interesting to the surgeon are the sixth, seventh, twenty-fourth and twenty-fifth. The sixth is devoted to hygiene and physical therapy, including exercise and massage. In the seventh, blood-letting is discussed and the ideas of Antyllus and Galen as to the indications and sites for venesection are carefully gone into. Antyllus' operation for aneurysm is described. The twenty-fourth and twenty-fifth books are devoted to anatomy, the twenty-fourth to the anatomy of Galen and the twenty-fifth to that of Rufus of Ephesus.

Throughout his works, Oribasius seems to be approaching his subject with a judicial and unbiased mind. He is endeavoring to give the ideas of the authorities as best he may and letting his reader form his own conclusions rather than forcing his personal opinions on him. Consequently one feels that in this work he is getting a true insight into the thoughts and opinions of the ancient surgeons through the medium of an educated and clear thinking man, who, though by his own confession only a compiler, did his work so carefully and well that it lived for centuries and was frequently included in the Beneventan manuscripts, before the discovery of printing allowed its more widespread dissemination.

ALEXANDRI
TRALLIANI MEDIC^E

ABSOLVTISSIMI
LIBRI DVODECIM.

R A Z Æ D E PESTILENTIA

Libellus. Omnes nunc primum de Græco
accuratissime conversi , multisq; in lo-
cis restituti & emendati , per
IOANNEM GVINTERIVM ANDERNACVM.
DVO ETIAM LEGVNTVR HIS APPO-
fici indicēs : Alter Cōclusionum , & Capitum Sum-
mas nunc additas , continet , Alter in toto li-
bro scitu præclara demonstrat .

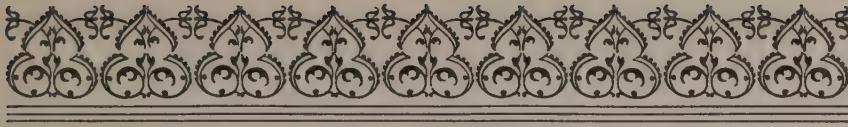
Q^e omnia recenti hac nostra editione , ut potuit fieri , die-
ligentissime expolita sunt , atque elaborata .



Venetiis apud Hieronymum Scotum.

1 5 5 5

TITLE PAGE



The Twelve Books of Medicine of Alexander of Tralles

THE founding of the Eastern Capitol of the Roman Empire at Byzantium, later to be known as Constantinople, marked the beginning of the shift of the center of world activity from Italy and Greece to Asia Minor. A few centuries later the fall of Rome plunged the world into the so-called Middle or Dark Ages during which world domination shifted from occidental Christian Europe to Mohammedan Orient. At the beginning of the period, Asia Minor still held what little was left of Grecian art and culture and much of the world's wealth. Of the countries of Asia Minor, Lydia was probably the richest and brings to mind at once its King, Croesus, reputed to be the richest man in the world. It was in this country, at Tralles, that Alexander, who was to serve as one of the steps by which Grecian medicine was to descend to the Arabians, was born toward the close of the sixth century. He was reputed to be the son of a physician, Stephen of Edessa, who served for a time at the court of Byzantium. Alexander's brothers all attained prominent positions in their chosen fields of art and science so all the members of this family were important in world affairs.

Old Masterpieces in Surgery

Alexander learned medicine from his father and from a tutor and patron, the father of Cosmas, possibly related to Cosmas Indicopleustus to whom we owe so much for his history of the Indian Syrian Christians of the Nestorian type who were driven out of Asia Minor. Alexander was not satisfied to remain in Lydia but, after receiving as much as he could from his father and tutor, began to travel; going to Spain, Gaul, Africa, and Italy, possibly as a military surgeon. He gained a great reputation as a physician and teacher, finally being offered a position of importance at Rome which he accepted and there spent the remainder of his life.

Alexander's principal work, the twelve books of medicine, which was to hand down the traditions of Hippocrates and Galen to future generations through the intermediation of the Arabians, was written originally in Greek, even though the author was living in Rome. It was soon translated into Latin and Arabic and became an authoritative work. It was first printed in 1504 and subsequently often reprinted both in Greek and Latin. One of the best translations is the volume illustrated, that of John Guinter of Andernach, a famous medical linguist of the sixteenth century. It was printed at Venice by Jerome Scotus and appeared in 1555. The volume also contains a translation of Rhazes' work on "The Pestilence." The two works are said to be "now for the first time most accurately translated from the Greek and restored and corrected in many places by John Guinter of Andernach." The book is an example of the period when the medical renaissance of the sixteenth century was under way, and was published, as were so many of the works of the ancient authors, in an attempt to stay the rise of the then modern medical authors and keep medical thought and teaching subservient to the dicta of the ancients. It was

SERIES CHARTARVM.

2 ABCDEFGHIKLMNOPQ RST
VXYZ AaBbCcDdEeFfGgHh.

Onines sunt quaterniones.



Venetiis apud Hieronymum Scolum.

I S S S

COLOPHON OF THE 1555 EDITION

published apparently as a textbook to be used by the students in the universities, and as the language of medicine was Latin it was printed in that tongue. The original, which Guinter says he followed closely, after he had decided what the original was, lent itself excellently to this use, for the work is above everything else didactic in its makeup. It seems to bear witness to the fact that Alexander was a teacher, for no one but a teacher could have or would have arranged the material in such form as it appears here. He covers the diseases of the body from head to heels, taking them up in short paragraphs, giving most lucid descriptions, and stating his points clearly and concisely. The first book begins with alopecia and the last ends with a discussion of intestinal, hepatic and pulmonary fevers taken from the work of Aetius af Amida.

Alexander seems to have been well acquainted with the literature of his predecessors, though he does not follow them blindly as did most of the men of his time. There is practically no operative surgery in the book and the treatment for most of the surgical diseases noted is medical, of course considering blood letting, which he advises frequently, as medical treatment. The work, however, gives a good idea of the amount of surgical diagnosis known in the sixth century. The author distinguishes between inflammation of the lung and that of the pleura and states that if pus is free in the chest it can sometimes be heard to splash when the patient is moved suddenly. In his discussion of stones in the urinary tract he is rather disappointing, as he does not mention operative treatment, though he differentiates between stone in the kidney and stone in the bladder. In another chapter he also draws a distinction between obstruction of the bowel due to mechanical means and that due to inflammation. Correctly he advises against the use of cathartics in the latter.

After looking over the work, one almost comes to the conclusion that the book was written primarily as a textbook for a course in diagnosis and that the therapeutic side was purposely restricted to medical measures.

PAVLI AEGINE-
TAE MEDICI OPERA A IOANNE
CVINTERIO ANDERNACO MEDICO EXERCITATISSIMO
summiq[ue] iudicij conuersa: & illustrata
commentarijs.

Cum Indice.



*Cautum est priuilegio Caroli Quinti Imperatoris, ne quis intra septem
annos, ex Francisci Galliarum Regis ne intra tres quisquam Typo
pographus a se impressum aedat: aut aliunde empta
uendat: cuius poena in diplomatis
notata est.*

Argentorati per Vuendelinum Rihelium
ANNO M. D. XLII.

TITLE PAGE



Paulus of Aegina, The Collection of the Pleiades

THE last of the great surgeons of the Byzantine period was Paulus of Aegina. With his passing the final spark of the old Greek culture and science was extinguished so far as it could be called Greek. The so-called Dark Ages were ushered in and culture in art and science passed on to the Arabians. Being the last of the great Greeks, Paulus' work was taken as the most modern compilation of the time. With the writings of Hippocrates and Galen it was translated into Arabic by Honëin Ben Ishak, also known as Joannitius, and became the foundation upon which the superstructure of Arabian medicine and surgery was built. The medical portion was followed by Rhasis in his teachings and from its surgical portion, the sixth book, Albucasis laid the basis for his surgery which was to remain the authority until the appearance in the fourteenth century of the great work of Guy de Chauliac.

Notwithstanding the prominence of Paulus of Aegina as a surgeon, practically nothing is known of his life. Even the date of the period during which he lived is a matter of dispute. Some authorities place him as early as the fourth century and others

as late as the seventh, with the majority believing that the later date is the more correct. His name establishes fairly well that he was born on the Island of Aegina, a little way from Athens. Concerning his education, again we are forced to guess, but considering his knowledge of the ideas of the ancients which meant access to their work, it is reasonable to believe that he was a product of the school of Alexandria. Regarding the remainder of his life, little is known except that he was evidently a man with a great reputation as a scholar especially among the Arabians by whom he was called "Alkawabeli" (The Obstetrician).

In spite of his great reputation, Paulus left little original work. He was, as his predecessors had been, a compiler. He drew largely from the writings of Hippocrates and Galen and the still more recent Oribasius. He refers to other later authors but does not mention them by name, so their identity is lost to us. He summarized his knowledge in the "Seven Books of Medicine" called by the Arabians "The Collection of the Pleiades." When printing came into general use, Paulus' work was one of the first printed in Greek, being published by Aldus in 1528. The Arabian manuscripts were better, however, and from these the work was translated into Latin separately by three great scholars—Albanus Torinus, Guinter of Andernach, and Janus Cornarius. The first edition of the Guinter translation was published in Paris (1532) and the one here illustrated at Strassburg (1542) being printed by Wendelin Rihelius. The complete works of Paulus have also been translated into English by Francis Adams and published in three volumes by the Sydenham Society (1844-46-47). In the Andernach translation a delightful touch is given to the book by the wood cut initial letters of the chapters. For example, the ornamental capital

letter Q which heads the surgical book depicts two cupids walking on crutches.

Paul of Aegina was probably a wandering surgeon and teacher. It is generally believed that after receiving his education at Alexandria, he traveled throughout the Orient, absorbing what he could and practicing where he might. His seven books cover the entire subject of medicine as it was known in his day, the most interesting book to the surgeon being the sixth which he devotes to surgery, and differing from many of the authors of his era, he pays great attention to operative surgery, which lends further color to the belief that he was an itinerant surgeon as most of the operating of the time was done by this class of practitioner.

Paulus begins the surgery with the head, goes on to the eyes and gradually travels downward, ending with fracture and ulcer of the foot. He thus covers the entire body. One finds that he operated upon many conditions—As a rhinologist he removed polypi, as an ophthalmologist he removed pterygium and in the mouth he not only extracted teeth but also performed tonsillotomy. In general surgery he operated upon hernia, opened empyema with the actual cautery, and in urology he removed stones by lithotomy. As a war surgeon he evidently had considerable experience in the removal of foreign bodies. In this manipulation he calls attention to the technique that Paré emphasized nine centuries later in the Brissot case: that in removing a foreign body the patient must be placed in the position in which he was when the foreign body entered. He devotes also considerable attention to fractures and dislocations. His directions for reduction and immobilization are quite clear. He makes use of traction by machines for reduction and splints for immobilization.

He distinguished between struma of the anterior portion of the neck (goiter) and that of the lateral portions (adenitis). His operation for struma is most interesting. He says, "We also lift up the larger strumas transfixated with hooks and at the same time the excised portions are freed from the body which surrounds them on all sides, being constantly mindful that neither the arteries, which are called the carotids, nor the recurrent nerves are injured." This may be applied either to an adenectomy or a thyroideotomy but in either event it sounds rather modern. Paulus did not, however, originate the operation; for the warning against wounding the laryngeal nerves came from Galen who relates an instance of the voice being lost through this accident at the hands of an ignorant surgeon. Aetius of Amida likewise refers to Leonides of Alexandria (about 200 A.D.) as advising the operation. Paulus, however, differed from his predecessors in adopting the ligature rather than the actual cautery for stopping hemorrhage in this operation. He says "If any divided vessel obscure the operation, we may include it in a ligature, or cut it asunder, if not large."

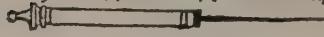
In addition to his eye work, which was considerable, Paulus takes up the operation of tonsillectomy of which little had been said by his predecessors. His description is so clear and lucid it will bear quoting. "Therefore the man being seated facing the light of the sun, we command that he open his mouth. The head being held by one assistant and the tongue pressed against the lower jaw by another using a spatula called by the Greeks 'glossocatichon,' we thrust a hook through the tonsil and we draw upon it just enough that we do not drag its membranes forward at the same time. Next we amputate it entirely from its base with a scalpel devoted to binding (?), called *ἀγκυλότομοι*. There are two of these instruments having opposite arcs of

curvature. After one is cut out, the other is to be come to alternately in turn in the same manner. The function of the scalpel being finished, the patient will gargle with cold water or posca," (a kind of sour drink composed of vinegar, water and eggs). The danger of and methods of treatment of postoperative hemorrhage are noted.

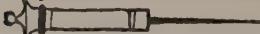
Paulus gives the impression that he was a very clever manipulator and technician.

Albucasis

Forma experientis ex plumbō medy.

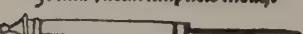


Forma experientis ex plumbō parui.

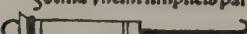


Forma yncinorum et sunt multarū spērū; qm̄ ex eis sunt simplices, s. quibus est curuitas yna; et sunt trium specierū sicut ydes, magni medy et parui; et ex eis sunt yncini ceci; et sunt trium specierū; et ex eis sunt yncini babentes duas curuaturas; et sunt triū specierū; et ex eis sunt yncini hñites tres curuaturas; et sunt triū spērū; et oes isti sūt necy in loco suo. *Forma yncini simplicis magni.*

Forma yncini simplicis medy.



Forma yncini simplicis parui.



Forma yncini ceci magni.



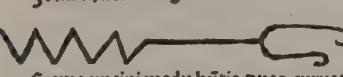
Forma yncini ceci medy.



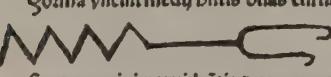
Forma yncini ceci parui.



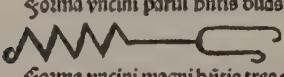
Forma yncini magni hñitis duas curuaturas.



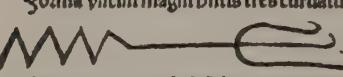
Forma yncini medy hñitis duas curuaturas.



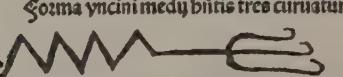
Forma yncini parui hñitis duas curuaturas.



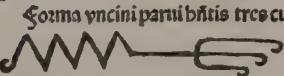
Forma yncini magni hñitis tres curuaturas.



Forma yncini medy hñitis tres curuaturas.



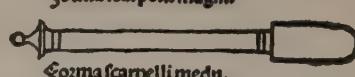
Forma yncini parui hñitis tres curuaturas.



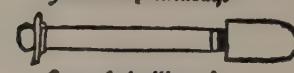
Forma yncini magni hñitis tres curuaturas.

Et iste sunt forme scalpelorum quibus seccantur et excoriantur nodi; et apostemata et sunt trium specierū; quoniam ex eis est magnum medium et paruum. Formam extremitates quibus fit sectio sunt acute; extremitates alii sunt non acute; et non ponuntur taliter nisi ut cum eis fiat iuvenatum in excoriatione nodozū apud timorem incisionis vene aut nervi. Et ut sanetur per ea infirmus; et inueniat trahillitatem parumper ex adiustione quā inuenit apud excoriationem apostematis.

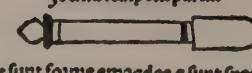
Forma scarpelli magni.



Forma scarpelli medy.

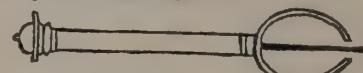


Forma scarpelli parui.

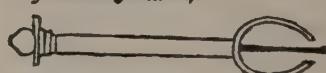


Iste sunt forme armagdea et sunt specierum trium.

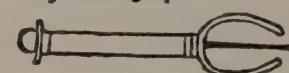
Forma magda magni.



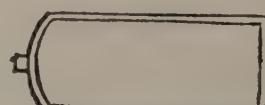
Forma magda medy.



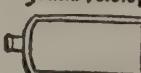
Forma magda parui.



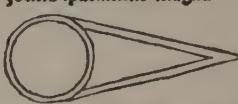
Forma vētose magne.



Forma vētose parue.



Forma spatulilis magni.



Forma spatulilis medu.



Forma spatulilis parui.



Sunt ex eis et sunt similia radio; cum quo fit alcohol; et in extremitate lata est puncta spatulilis occultata; et in ea currit ad interiora; et ad exteriora quandovis sicut ydes. Forma spatulilium que absconduntur inter digitos apud perforationem apostematis; non recipiunt ea firmi; sunt trium spērū magnū medium et paruum. Forma spatulilis magni medy et parui rotundi cum extremitate puncte nunc dixi eos. Forma ventosarum cum quibus absconduntur fluxas sanguinis et sunt trium specierū magne media et parue. Sunt ex eis aut cirrino rotundi ad longitudines pariper sicut ydes; et sunt ad subtilitatem et opacitatem sunt



The Surgery of Albucasis

WITH the fall of Graeco-Roman civilization at the beginning of the middle ages, the germ of that civilization with its culture and learning was transferred to the Arabians and by them fostered during the period. To the Arabians and other Orientals we are indebted for preserving medical science, among other sciences, and keeping it alive to be handed back to bloom again in an occidental civilization with the Renaissance. During the middle ages the Hippocratic and Galenic systems of medicine were the most important and but little was done to add to them. However, the period did see the birth of a definite separation of medicine and surgery—though both were practised, not to the same extent to be sure, by the same individual.

The latter part of the middle ages produced Chalaf ben Abbas Abul Casim el Zahrewi (Albucasem, Alzaharavius, Albucasis) of Elzahara (Zahera) near Cordova, Spain, who was a Spanish-Arabian physician born 936 and died 1013. His compendium ("Altasrif") was mainly copied from the medicine of the Greeks but the portion devoted to surgery was an advance over Graeco-Roman methods. This surgery, translated into Latin, was first

printed in 1497; the second edition, here illustrated, was published by Bonetus Locatellus for Oct. Scotus' heirs, Venice, 27 Jan. 1500.

Albucasis' surgery consists of three parts: (1) The use of the cautery both actual and medicinal, i.e. the use of caustics; (2) operations with the knife and exploratory puncture—venesection, removal of foreign bodies, principally arrows, etc.; (3) reduction of fractures and dislocations and the cure of sprains.

The cautery appears to be a cure-all and is indicated in nearly all diseases which are considered in the realm of internal medicine. For each part of the body and for each disease a different form of instrument seems to be indicated and the shapes of the cautery blades are many and varied. The indications for the use of an iron cautery are distinct from those for a gold cautery and of the two the gold is stated to be the more difficult to use. The actual cautery is advocated as more simple, and capable of less harm than the medicinal. As to its general indications, it appears to be useful for everything—headache, toothache, apoplexy, epilepsy, melancholia, ozaena, and diseases of the eyelids (in which both the actual and medicinal cautery are used). It is also advocated for pleurisy, dropsy, haemorrhoids, fistula in ano, sciatica, and as an adjuvant in fractures and dislocations. Hernia is treated by reduction of the mass and cauterization, being careful that the intestines neither escape from the wound, nor are injured by the cautery. The patient is kept in bed 40 days and then convalesces for 40 days more. He excises cancer with cautery. The cautery is also recommended for haemostasis. For each of these purposes most specific and detailed directions as to the technique of using the instrument are given together with a drawing of the form of the instrument to be used. In some diseases, the number, size and shape of the spots to be made on the

skin are illustrated. The use of the cautery takes up the major portion of the book.

In the second part, cutting operations are not strongly advocated except phlebotomy which is universally used. Trachoma was common and many operations for incurved eyelashes and adherent lids are described. Ranula is described and excision advised. Vesical stones are removed by lithotomy. Intestinal wounds are sutured with small threads derived from the intestinal coats. He is exceedingly cautious about high amputation. Arteries are ligated in continuity in wounds and different forms of suture are described. Obstetrics and its traumatic sequellae are considered carefully. Extraction of arrows is taken up in detail and the forceps to be used in their removal are illustrated.

In the third part, fractures and dislocations are discussed. Reduction is almost entirely manual. The machines formerly used, which regained their popularity in later times, are neither described nor illustrated. One wonders whether the works of Hippocrates and Oribasius were unknown to Albucasis, which hardly seems possible, or if he did not believe in reduction with an instrument which, if not properly used, might cause a great deal of harm. Various ointments are used to soften the parts before reduction. In dislocation of the shoulder he describes three anatomical types: the first and most common, an inferior dislocation; the second a dislocation inward toward the chest; and the third a dislocation upward. He further states that posterior dislocation cannot occur because of the scapula and anterior dislocation because of the nerves. It is interesting to note that the second method of reduction of dislocation of the shoulder advocated is the method of the heel in the axilla.

This translation from the Arabic into Latin was made by Gerhard of Cremona, born 1114, died 1187.



TITLE PAGE OF THE EDITION OF 1523



The Royal Book of Haly Filius Abbas

THAT period of the history of medicine and surgery following the fall of the great Grecian and Roman empires when the seat of learning moved from continental Europe to northern Africa and Asia and Alexandria became the home of world culture, affords almost a definite proof that practical knowledge once gained is seldom lost. At this period in the world's history transportation was very slow; printing was not to be discovered until centuries later, and the only form of record was the manuscript; while knowledge was communicated either by the reading of the manuscript to audiences of variable sizes, or by word of mouth through the bards and singers. Considering all these difficulties it seems almost miraculous that the knowledge of medicine and surgery as it then existed, should have been preserved. Yet with the fall of these great nations, in spite of these handicaps and in spite of differences in language, medicine and surgery went on as if no change in the world had occurred. The seat of medicine passed across the Mediterranean into Arabia and Persia. Here the little spark of learning tossed away by the decadent Græco-Roman civilization

alighted and was fanned into flame by learned men. From this arose the so-called Arabian school not only in medicine and surgery but also in philosophy and mathematics. Though called the Arabian school or period, it was by no means limited to the Arabs or Arabia for nearly all the Orientals; Syrians, Persians, Jews, and Christians called by Arabians names, became interested and each added his quota to the sum of human knowledge and the territory influenced by this so-called Arabian School spread from Spain on the west to Asia Minor on the east. The basis of this was naturally the result of the teachings of the Græco-Roman school, and so we find most of their medical and surgical writings founded upon the works of Hippocrates, Galen, Dioscorides, Aetius, Paulus of Aegina, Oribasius and others, though in some cases they go back further, even to the Indian and Egyptian teachers.

The Arabian school reached its height from the eighth to the thirteenth centuries. The majority of its great men were mystics and philosophers and few of them made advances in practical diagnosis or treatment. Human dissection was of course forbidden by the Koran and to aid this, philosophical thought is always much easier than practical work. However, in the tenth century this school furnished a physician and surgeon whose work was to serve as a model and an authority for seven centuries.

Ali-Ben el-Abbas also called Haly Abbas, Haly Filius Abbas, and Ala-ed-Din-el-Madschusi was born in Persia and belonged to the Magi. He studied medicine under Abu Mahir Musa. The date of his birth is not known but he died in 994, the 384th year of the Hedschra. The record of his work which remains to us today as the tangible result of his effort is called the Almaleki or Royal book and was dedicated to the Sultan Adhaded-Daula

Ben Buweik whom he served as physician in ordinary. It was the greatest book of Arabian medicine up to the appearance of the work of Avicenna. Haly Abbas's work was translated in the eleventh century by Constantinus Africanus under the title of *Pantegneum*, which he put forward as his own. A later translation was made by Stephanus of Antioch in 1127. This appeared in print first in 1492 as a folio published in Venice. The volume, the title page of which is reproduced here, is the Stephanus translation augmented with notes and explanations by Michael de Capella which was printed in quarto (Lugduni, 1523). Capella evidently had a great admiration for Haly Abbas for on the beautifully ornamented title page he reproduces drawings of three professors at their reading desks—entitling one Hippocrates; one Haly Abbas; and one Galen. By this he means evidently to convey the impression that he considers Haly Abbas the greatest representative of the Arabian School which followed the two previous schools of Hippocrates and Galen.

The volume, after a preface of synonyms of Arabian and Latin terminologies by Michael de Capella, consists of two main divisions; theory and practice. Haly Abbas appears to have been both a clinician and an experimentalist in a small way. While he imitates the Greeks in diagnosis and philosophy and the Arabians in therapy yet he advises his readers to test the symptoms and descriptions of diseases as found in books by the evidence of their own eyes as he himself is in the habit of doing. As an experimentalist he tested the various proposed means of healing on sick animals.

The surgical portion of the work occupies 57 of the 319 pages. It takes in the surgery of the entire body. Though the practice of the technique of surgery was usually left to underlings and the manual portion of the practice of obstetrics to midwives, one is

almost led to believe that this man performed the operative work himself. His instructions are detailed and clear and it seems as if it must have taken actual practice to give him such concise knowledge. As an example, in Chapter 46 when discussing after treatment of lithotomy he says: "if you fear hæmorrhage, it is necessary to apply a compress on the wound wet with vinegar and water, or water and oil of roses. You order the patient to lie flat on his back and you keep the compresses wet constantly with the water and oil of roses. Then on the third day remove the dressings and apply on the wound the black plaster which you have prepared. Then change the dressing each day for some time because of the strength of the urine, and apply a new plaster. . . . In addition it is necessary to tie the thighs together with bandages to assure the dressings remaining in place on the wound. If the wound shows one of the accidents to which wounds are subject such as corrosion, corruption, and others, it is necessary to treat it with remedies with which similar things are treated."

Haly Abbas was a great believer in bloodletting and devotes considerable space to it. He discusses the proper veins to be chosen for venesection in certain diseases and gives the indications for its use. He also describes the use of the ligature in the operation he describes as amputation of the artery. He states that sometimes when blood is drawn from the front of the elbow the brachial artery may be wounded. If this happens and the flow of blood cannot be stopped by the application of astringents and the cautery, it is necessary to cut down on the artery and free it from the surrounding parts until it is isolated. When this has been done, a silk ligature is passed around the artery and tied above and below the wound in the vessel and the vessel divided between the ligatures at the site of the

wound. In the treatment of aneurysm he follows the dicta of Antyllus who had been the authority on that subject for centuries.

The greatest part of his surgical knowledge Haly Abbas obtained from the Byzantine group of surgeons and of these he seems to depend mostly on Paulus of Aegina whom he follows closely in the majority of surgical diseases. It is, however, interesting to note that he does not neglect his contemporaries for in his description of the methods of withdrawal of arrows he follows Albucasis. Whether they ever met is not known, but it is rather remarkable that two men—one Albucasis, a Spaniard of Elzahara, and the other, Haly Abbas, a Persian, living so far apart at a time when communication was so slow, should have about the same ideas on certain surgical subjects. Haly Abbas, however, follows Albucasis so closely that he evidently had access to his works.

In all of his surgical teachings, Haly Abbas, though in the main he follows the ideas of others, nevertheless puts a great deal of himself into his work and throws little side lights here and there that make the subject more understandable and after looking over the contents one does not wonder that the book was one of the great authorities of its period.

TROTULÆ CURANDARVM AEGRITV.

DINVM MVLIEBRIVM, ANTE, IN, ET POST

PARTVM LIBER VNIVS, NVSQVAM ANTEA

editus, quo foeminei sexus accidentes morbi & passiones, infantum & puerorum à partu
cura, nutrictis delectus, ac reliquis iſice adnata, dispositiones utriusque sexui contin-
genes, experimenta denique variarum ægritudinum, cum quibus-
dam medicamētis decorationi corporis inservientia, edocentur.

PROLOGVS.

VM auctor uniuersitatis D E V S in prima mundi constitutione, rerum naturas fin-
gulas, iuxta genus suum distingueret, naturam humanam supra cæteras creaturas fin-
gulari dignitate concidit. Huic enim, supra aliorum animalium conditionem, ratio nis
& intellectus libertatem dedit. Propterea uolens eius generationem perpetuo subfi-
stere, in sexu dispari, masculum & foeminae creauit, ut eorum fœcunda propagatio-
ne nunquam defineret emerge futura sfooles. Quorum quidem complexiones grata
quadam commixtione contemporans, naturam masculi calidam & siccā, foemelle & ue-
tro frigidam & humidam constituit: qua cuiusque alterius complexionis excessus, mutua qualitatū cō-
triarum repugnantia coercentur: adeo, ut uiri constitutio calida & siccā, mulieris frigiditatem & humi-
ditatem: & econtra huius natura frigida & humida, illius complexionem calidam & siccā remulceret.
Similiter ut masculus qualitate fortiori dignus, in mulierem tanquam in agrum semen effundere, & mu-
lier qualitate debiliore prædicta, tanquam uiri officio subdita, semen effusum in gremium natura suscep-
ret. Quoniam ergo mulieres natura sunt uiris debiliores, hinc est quod in eis s̄p̄ius abundant ægritudi-
nes, maxime circa membra operi naturæ debita. Quæ cum in loco secretiori accidant, ipse propter uere-
cundiam, & conditionis fragilitatem, non audent angustias suarum ægritudinum medico reuelare. Qua-
propter ego, miseranda illarum calamitate, præsertim cuiusdam matronæ investigatione, cōpula, incepit di-
gentius contemplari de ægritudinibus, quibus foeminius sexus sepiissime molestatur. Cum itaque in mu-
lieribus non tantus abundet calor, qui prauos & superfluos, qui in eis quotidie congregantur, sufficiat cō-
sumere humores, nec tantum labore ualeat earum debilitas tolerare, ut sudorem possit ad exteriora il-
los natura expellere, sicut in uiris: ideo ipsa natura, propter defectum caloris, eis præcipuum quandam
purgationem destinauit, scilicet menstrua, quæ uulgus flores appellat. Nam sicut arbores non producunt
line floribus fructus, sic mulieres sine propriis floribus, conceptionis officio defraudantur. Hæc auté pur-
gatio contingit in mulieribus, sicut de nocte uiris pollutio. Semper enim natura grauata quibusdam humo-
ribus, siue in uiris, siue in mulieribus, iugum suum nititur deponere, & labore minuere. Solet præterea
huiusmodi purgatio mulieribus contingere circa decimum tertium, uel quartumdecimum annum, uel pau-
lū citius, uel paulo tardius, secundum quod in eis magis, uel minus abundat caliditas uel frigiditas. Durat
tem usque ad quinquegesimum annum, si est macra: quandoque usque ad sexagesimum, aut sexagesi-
numquintum, si est humida: in mediocriter pinguisibus, usque ad quadragesimumquintum. Si autem de-
bito tempore & ordine contigerit talis purgatio, exonerat se cōpetenter natura à superfluis humoribus.
Si uero menstrua plus uel minus exierint, quam debent, plures ægritudines inde emergunt. Quoniam
inde minoratur appetitus tam cibi, quam potus. Quandoque fit uomitus: & quandoque appetunt ter-
ram, carbones, cretam, & similia. Quandoque ex eadem causa dolor sentitur circa collum, dorsum, & in ca-
pite. Quandoque adest febris acuta, cordis morsus, hydropsis, uel dysenteria. Hæc autem contingunt, uel
quia tempore longo deficient menstrua uel quia proflus non habent: unde non solum hydropsis, uel
dysenteria, uel morsus cordis accidunt, sed & alię peiores ægritudines. Aliquando enim accidit diarrhoea,
propter nimiam frigiditatem matricis: uel quia uenæ eius sunt multum graciles, ut in extenuatis mulie-
ribus: quia tunc humores spissi & superflui non habent liberos meatus, per quos possint erumpere: uel
quia humores sunt spissi & uiscosi, ideo propter conglutinationem, eorum exitus impeditur: uel quia
deliciose comedunt: uel quia ex aliquo labore multum sudant. Sicut testatur Galenus. Mulier quæ se nō
exercet multum, necesse est, quod abundet in multis menstruis, ad hoc ut sana existat. Aliquando mulieri-
bus deficient menstrua, quia in corpore earum coagulatus est sanguis: uel quia sanguis per alia loca emit-
titur, ut per os, aut per nares, per sputum, aut hemorrhoides. Aliquando deficient menstrua ex nimio do-
lore, uel ira, uel motu, uel timore. Si autem diu cessauerint, suspitione grauis ægritudinis futuræ arguit
Nam urina eorum uertitur in ruborem, uel in colorem lotus carnis recentis: quandoque in uiriditatē,
uel liuiditatē, aut in colorem, quai s̄ est color graminis, facies earum mutatur.



Trotula, The Diseases of Women

THE name alone of Salerno calls to mind the picture of medicine and surgery struggling to regain their lost prestige in Continental Europe. To it, in the eleventh century, came Constantine, the African, driven from Carthage by the threats of his enemies, bringing with him the knowledge of the Arabians. The city had been founded by the Romans many centuries before Constantine, and had become famous as a health resort and a shrine for pilgrims, because its cathedral held the bones of St. Matthew and the relics of the saints Thecla, Susanna, and Archelais. It was only natural that it should become the site of a school, and in 802 A.D. one is thought to have been founded there by Charlemagne who was so active in trying to re-establish learning in Europe. This school was probably kept up by the Normans during the period of their rule in lower Italy, so by the ninth century Salerno had become the home of one of the greatest universities on the continent.

Because of its value as a watering place it followed almost as a matter of course that medicine should be taught there and finally the "Collegium Hippocraticum" or Hippocratic College

was formed to teach medicine. Among the earliest teachers were four men: a Jew, Helinus; an Arabian, Adala; a Greek, Pontus; and a Roman, Magister Salernus. Each of these taught students of his own race in his own tongue. But before this there was a well-known family, that of Ruggerio, in Salerno, which furnished many important citizens to lower Italy and finally from it sprang the most famous woman of all early medical history. One must bear in mind that at this time medical practitioners of the male sex were restricted in their treatment of the opposite sex to generalized diseases and anything pertaining to disease of the generative organs and not only disease alone but also childbirth whether normal or abnormal, was out of the province of the male physician. Hence the midwife was supreme in the field of obstetrics and gynecology and it only remained for one of those who were known generally by the name of the Women of Salerno to make herself a lasting name in medicine. This opportunity was grasped by a woman named Trotula who came from the family of Ruggerio and was probably a native of Salerno. The exact time when *the* Trotula, for the name continued for centuries among the women of Salerno, lived is not certain. Her work appears in the Venetian Collection "Medici Antiqui Omnes," etc., under the title "The First Book of Trotula Concerning the Cure of Diseases of Women, Before, During, and After Delivery, etc." It is probable that she lived during the eleventh century and wrote her work before the arrival of Constantine for nowhere does she mention the Arabians in it. This is of course a matter of conjecture only, but the account of De Renzi in his "Scuola Medici di Salerno" setting the date of Trotula as during the time of the last Prince Longobardo but before the arrival of Constantine seems to be worked out logically and appeals to one as probably correct. According to him, Trotula

was the wife of a physician, John Platearius the elder. That she was well known and equally well regarded by the men of her time is shown by the statement of one of the famous physicians of the eleventh century, Rodolpho Malacorona, who in the year 1059 said he did not find in Salerno one who could equal him "*praeter quamdam sapientem matronam*" except a certain learned matron who could have been none other than Trotula.

The most important work of this woman from the standpoint of surgery is the Diseases of Women noted above. In the Latin reprint it covers ten folio pages, beginning with a prologue in which she discusses the creation of the world, and of man and woman with an elaboration of their different characteristics and functions. Then comes the body of the work which treats of gynecological conditions in more or less textbook style. This begins with the various abnormalities of the menstrual flow and proceeds to displacement of the uterus and finally to the consideration of the puerperal state, with its complications, etc.

Then, as now, efforts were made to prognosticate the sex of the fetus with about equal success in both periods. Trotula had a rule which she states thus: "In order to know whether the woman will bear a boy or a girl, take water from a spring, and draw two or three drops of blood or milk from the right side of the woman and drop them into the water; if they sink she will bear a boy; if they float, a girl."

The work derives its greatest importance from the fact that it contains the first known description of perineorrhaphy. This is advised for complete tear "in which the vulva and anus make one foramen." Three or four silk sutures are inserted to draw the parts together. The wound is dressed and the patient put to bed with her feet higher than her head. There she remains for eight or nine days, after which she gradually resumes her duties.

313

CONSTANTINI

AFRICANI MEDICI DE HUMA-
na natura, uel de membris principalibus
corporis humani, Liber I.

De cerebro.



Erebrum natura frigidum & humidum est, ideo ut & facile ad susceptionem diuersorum conuerteret, & ut moventibus membris mobilitatem præstaret, & ut calido & sicco spiritui ad caput exhalanti temperiem inferat. Cuius miringa frigida est & sicca & tensa. Infra quam sunt divisiones tres. Prima dicitur phantastica. Secunda rationalis. Tertia memorialis. Inter phantasticam & rationalem est pannus quidam frigidus & siccus, & depressior eo qui diuidit inter memoriam & rationem, habens in se modicum tenuissime carnis. Ex memoriali uero procedunt duo canales tenues & humidi, ut medulla spinalis quæ penetrauit compaginem totam, & ueniant usq; ad phantasticam cellam, per quos possit phantasticus spiritus & rationalis commendari memorie, & iterum memorialis duci ad rationem & phantasiam.

De auribus.

Cuic; auri supraponitur unum os frigidum & siccum, & sine spiritu quæ inferius adhærent illi tenui panno qui diuidit inter phantasiam & rationem. Quibus sunt singula foramina, in obliquum facta, habentia tenui initium ab ipso panno. Quæ intrinsecus habent inducendum tenuissimum frigidum tum & siccum, per quod ducitur spiritus ab ipso interiore panno, præstans auribus uitutem audiendi. Et est audibilis qualitas calida & humida, ut qualiscunq; sonus infertur auri ab humiditate suscipiatur, à calore attrahatur ad cerebrum, ut sciatur qualis sit. Siccietas uero ossium ad hoc est, ut tinnitus in eis per eque obseruetur, secundū exteriorem euentum.

De oculis.

Oculorum autem tres sunt tunicæ interiores frigidæ & humidæ. Prima est ut aqua coagulata lucidissima in qua uirtus uisibilis est. Secunda est ut tenuioui album, Tertia ut uitrum modicum Ee habens



Constantinus Africanus

THE Arabian school held the foremost position in the medical world beginning with the eighth century. Continental Europe, however, though to a great extent quiescent, had nevertheless not neglected either medical practice or teaching. There the direction of medical matters had passed over gradually from the lay physicians to the clergy. The monks assumed control of the teaching of medicine, as well as its practice, and carried it on in several institutions, though at first more in a practical than a theoretical way. One of the first of these schools was the monastery of Monte Cassino. This had been founded by St. Benedict himself on the site of an old temple of Apollo to be used as a place where the sick could come for treatment and where St. Benedict might have the opportunity to work his remarkable cures. These cures were collected by one of the later abbots, Desiderius (born 1027), and left by him as "Four Books on the Miraculous Cures of St. Benedict." The quality of these cures might be questioned as the following incident shows. Henry II, the Emperor of Bavaria, was believed to be afflicted with the stone and came to Monte Cassino for a cure.

Henry was a prominent monarch, and St. Benedict apparently not wishing to cause him any undue inconvenience, himself exerted his special power and removed the stone by lithotomy while the patient was asleep and then healed the wound at once. That this was done was proven by the fact that when the Emperor awoke, the stone was in his hand. What more could be desired?

The good St. Benedict apparently wished this great power which he possessed to be his and his alone so, as the founder of the monastery, he forbade the teaching of medicine there. This prohibition was soon broken and its abbot Berthanus taught medicine both orally and by writing and Monte Cassino held its position as one of the great, if not the greatest, school in Italy until its reputation was eclipsed by that of the school of Salerno. During the ninth and tenth centuries this monastery held its position principally because of the reputation gained through its association with the miracles of St. Benedict; but as time went on something more was needed. Arabian medicine had gradually been improving. As yet its teachings had not crossed the Mediterranean into Europe, but it was only a question of time when they would do so. The only unsettled point was the means by which this would be accomplished. The agency turned out to be a Carthaginian, known as Constantinus Africanus, who was born some time during the first quarter of the eleventh century. After receiving his preliminary education, where is not known, he is supposed to have traveled many years throughout the east including Egypt and India to satisfy his thirst for medical knowledge. Finally he returned home.

Whether he entered into practice or not is not established but shortly after his return he was accused of being a sorcerer and finally his life was threatened. One can almost sense the feelings

of this man who had spent years in the pursuit of knowledge, possibly one of the most learned men in Carthage, desirous of communicating the results of his labors to others, met with accusations of his character, which, as human nature has not changed much, were probably started by competitors, mediocre or less than mediocre, who were jealous of his attainments. One can imagine him, sick at heart, disgusted with the world in general, in fear of his very life, leaving his native land and fleeing to Italy. There he went to Salerno and joined the famous school, teaching for a time. Still being in the world of men and apparently not satisfied he went to Monte Cassino where he joined the order, became a monk, and sought peace and respite from worldly cares and disappointments in the monastery where he could study and write his books which served to bring the medicine and surgery of the Orient to the western world. There he remained until the end of the chapter which occurred with his death in 1087 and left behind him the reputation of being the most famous of all the illustrious monks that Monte Cassino produced.

From this sketch of what is known of his life, one would not expect to find much that was original in his work and this proves to be the fact. His writings were voluminous and varied, the results of observation of others and reading and not of personal practice. There may have been some work which he originated but as he does not give the sources from which he obtained his knowledge and makes no differentiation between his work and that of others it is not possible for us to tell the difference at this late date. His work was published from his manuscripts some centuries later and appeared in many forms and parts. He had translated it from the Oriental languages into a Latin which Baas calls "barbarous." The portion of his writings

which I have had the privilege of examining consists of three parts: "An Anatomy; A Discourse on Elephantia; and Medicaments Obtained from Animals." It was published at Basle by Henricus Petrus in August, 1541, as part of the "Collectio Chirurgica Veneta." The anatomy naturally follows that of Galen and reveals no evidence that Constantine had done other than follow the usual procedure of the monks of the period and accept the dicta of Galen as the last word. He had evidently done no investigation and no dissection even on the lower animals. The other works are practically negligible from the stand-point of surgery.

The writings of Constantine were many and varied. Evidently he translated all the authors whose works he could obtain, beginning with Hippocrates and continuing down to his own period. The most important of his works, as it served as the guiding light in the middle Salernitan period was that which he called the "Pantegni." This was practically a translation of the "Royal Book" or "al Maleki" of Haly Abbas. Up to this time the work had existed only in Arabic and was consequently of no value as a teaching manual in Salerno where Arabic was understood by very few, if any, of the students. Constantine's translation made it available for common use and with the scarcity of books on medicine and surgery it immediately took rank as the foremost book of the time. That the credit for writing it was given to Constantine was perfectly natural and to be expected. Whether on this account Constantine should be accused of plagiarism and deprived of the honor of producing such a work is a grave question, as many of the works of his predecessors whose names stand high in the list of great men in medicine did little more than reproduce and rehash the works of their predecessors. Constantine did, however, fail to give

credit to the authors whose work he translated and on this ground the accusation of plagiarism rests. He did give the name of the author in the books which he translated from Isaac Judaeus, who was a Jewish physician of Northern Africa, who died a little over a century and a quarter before Constantine did most of his work. As Constantine had mentioned Isaac Judaeus in this one work it was inferred that he had copied all of his work from the same author, but this inference is incorrect. As a result of it, however, one of the best examples of the work of Constantine, which contains practically all of the books was printed under the title of "Opera Ysaac" at Lyons in 1515. The title page shows three physicians of the middle ages, labeled respectively Haly Abbas, Ysaac, and Constantinus seated at a table, each with a book open before him. Haly Abbas with finger raised is speaking directly to Constantine while Ysaac looks on in rapt attention. A dish, holding a pen is on the table and a small page boy is bringing an ink well. Here we see that even as early as the beginning of the sixteenth century, these three great medical men of the middle ages were associated in the minds of the medical editors.

It seems fair then to conclude that whether Constantinus Africanus was an intentional plagiarist or not, one thing is certain. He deserves recognition as the introducer of Arabian and Oriental medicine into Italy. This resulted in the rise to greatness of the School of Salerno and the ideas of Constantine followed by those of the great Salernitans, Roger, Roland and the Four Masters, dominated surgery until the advent of the French School of which Guy de Chauliac was the outstanding surgeon.

Jupiter amurgia magis habet.

CE
SUS
PDI

Et tunc eius deoem de
tuta fuit deus homini for
mata utrumque spiritu et meo
meo et deoem agere inspi
re. Et deus fragilis si
pudor sit gravatus et
de deoem ut sic desublima
pura gloria habuitas et
etior similitudine et est in
genia exequitur ergo organofac
it deus natus peccati de
ato non datus cultus rationabilis
ad beatitudinem hunc deus formis capi
tum sine deoem ditatus libi ac
petiti pugnare a gloriosissime de
coram et quid a faciem vestigio
in faciem et ciprianius feliciter
deponit regnorum molles et
deus pugnatur utrūq; et deoem
la sua supradicta gemitus et
faciem rotundam ad pugnandum
deregno appetiuntur. Deinde ad tem
pore delectus admisimus deoem
die lumen addeutus trahimur. Et
prauis rocambolesque et asper
fuddet. Sumus conuersi usque ad
librum oculum etiamus et destruximus
miseris non augendis reliquo hi
aut aut et rora etenim pro
ci et omittimus. Quia uis uia
ex parte ardente in aliis est
et pulchra. et agilis gaudia te
huius ducit suu. Et si q; acci
uim patet in operi ornatus

gentis ad patrem suum non obtemperavit
Quia vero se contumeliam extinxerat
aduenientibus tribulacionibus obicitur
mutatur et solvantur et decedunt obitum

tionis nomini benchay dignitatis
et dignitatee salutis suorum imperiorum q[uod] curia
tabubus, ut et seorsim et curia munus
stru' usq[ue] intellit. Et curia munus
puncta utrumque glaucumus interpr-
te regis. Adibet curia certe docim-
us etiam quod non recipimus etiam
naturam et nos recipimus ita q[uod] est
glauco in granularum. Curia op[er]a
tumplaculosa ostinguntur et p[ro]p[ter]a
aldeam prouinciarum p[ro]m[on]t[er]ia
conspicuuntur, ut etiam nautarum et portuariorum
figurantes. In meo op[er]e inaudibile finis
invenit ualeamus. **C**ontra eam sicut
dignissimopatet op[er]e sub mortis in-
sum p[ro]cessus facilius h[ab]emus



Roger of Salerno

ROGER of Salerno, more properly called Roger of Parma, was the first outstanding surgeon of Italy to write a surgery and not depend upon the Arabian school for his ground work. He was born during the twelfth century and probably lived into the thirteenth. It is likely that he produced his surgery, which was known by various names, during the latter part of the twelfth century. Two names of the book are the "Practica Chirurgiae" and the "Post mundi fabricam," the latter being derived from the first three words of the preface of the work. It was so far superior to anything that had appeared up to that time and contained so much original material, for it does not contain much, if any, of the Arabic teaching, that it was at once taken up as one of the principal works for use in teaching at the school of Salerno. Thus it is one of the landmarks in surgery as it marks the breaking away of continental surgery from the influence of the Arabian school.

The book was not wholly the production of Roger's thought but rather stated the opinions and beliefs of a new school of surgery which was founded on the work of the old Greek masters

with the results of original observation added. Who his collaborators were is not definitely established, as Roger does not mention them by name but states simply that others helped and he wrote the book. The detail of giving credit to others by name was frequently omitted about this time as well as a little later. Constantinus Africanus, for example, does not mention the source from which his work was obtained though much of his writing was word for word translation of such authors as Haly Abbas Filius, Costa Ben Luca, Ishak Ben Soleiman and others. Following Roger was his pupil Roland, who rearranged his work and published it under his own name, though he does give credit to his master. He does not state, however, that much of it is copied word for word. Whether this plagiarism was intentional or not it is hard to establish as the writings were handed down in manuscript form for nearly three centuries and there was thus considerable chance of error. In the case of Roger of Parma and his pupil Roland I have had the opportunity of making a comparison between an original manuscript of the thirteenth century (see illustration) and a printed book of 1541. The manuscript is on vellum, beautifully illuminated and is made up of 36 folios written in different thirteenth century hands. It contains among other things, part of the surgery of Roger appearing under various headings. There is of course no title but above the initial letter is the statement: "Incipit cirurgia magistri rogerii" "Here beginneth the surgery of master Roger." Then comes the famous introduction beginning with the lines by which it is known "Post mundi fabricam." "After the formation of the world and setting it in order God made man of earthly substance and breathed the breath of life in him," etc. Following the introduction is the table of contents and then the text of the book. The other volume carries us on a few

centuries. It was printed by Henricus Petrus at Basle in 1541, and is called "Collectio chirurgica Veneta." This edition of the work contains a book, the title of which freely translated reads: 'A rational method of curing the ills of the human body, internal and external written by Roland.' Under the heading "Praefatio" we read again the well-known words "Post mundi fabricam" and so on. Going on further we find that save for an occasional word or change in phraseology the manuscript and book are the same. The disciple has taken the words of the master, arranged them a little better, and made the work more understandable. In some places he may have added a little new material but the chief change, and one for the better, is the arrangement. Roger did, however, write one part of surgery which remained his even to as late as the 16th century for we find in this volume of 1541, eight pages devoted to a description of phlebotomy ascribed to Roger under the title "De Modis Mittendi Sanguinem et de cuiusque utilitate Rogerii chirurgi peritissimi Libellus." 'The book of the most expert surgeon Roger concerning the methods of letting blood and its value.' Even this was to be questioned for in 1597 a similar work on blood letting was published and ascribed to Joannus Nicholaus Rogerius, a physician of Venice of the thirteenth century.

In the work of 1541 Roger gives the indications for phlebotomy and the sites where the incisions should be made. For disease of the gums, mouth or teeth he advises incision of two veins under the tongue. His indications are at first general and then methods are given in detail. In one general statement he says 'of the hip, tibia, and foot we incise veins because of pain of the kidney and bladder, and because of rheumatism, sciatica, and podagra, and constriction of the eyes, and swelling which affects the legs and feet or on account of withdrawal of the

menses or when women do not conceive.' The last two seem to be rather contrary indications.

Roger followed the teaching of Paulus of Aegina in the operative treatment of goiter, using several different methods of resection. As did Paulus, he differentiated, in a rough way only, between goiter and enlarged cervical glands, but he made a change in the treatment of goiter in that he used the ashes of sea sponges as a medicine for this condition. Though the claim is made that the Chinese used iodine in the treatment of goiter, either before or in the early part of the Christian era, Roger was the first occidental to employ it in this rough form and introduce into medicine a therapeutic agent for this disease which has furnished (at intervals of every hundred years or so, when after a period of recession it again comes up for consideration) material for argument and discussion, the end of which is not yet.

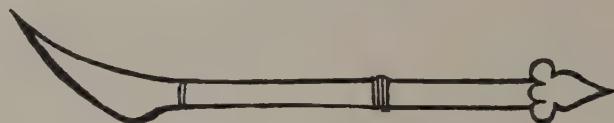
In much of his work Roger follows the ideas of the ancients but in many ways this group at Salerno which he, as spokesman, represents broke away from the tradition of the early writers and even from that of the Arabian School. Consequently he, typifying a school of surgical thought, deserves to be looked upon as the father of the new surgery in Italy if not in all Continental Europe.

The reason for this rehabilitation of surgery seems fairly plain. Roger represents the culmination of the change in surgical thought and practice brought about by the crusades. Previously the Arabian school dominated, but for a hundred years and more the representatives of that school had been bitter enemies and war had been incessant. Occidental armies had penetrated the Orient and absorbed the good of Oriental culture and knowledge. Whether they had brought back with them the originals of the works of the old Graeco-Roman medical

men is a question; but it is at least interesting to note that by the medical ordinance of Frederick II published in 1224, physicians, in order to graduate from Salerno, were examined upon the genuine works of Hippocrates, Galen and Avicenna, thus showing that these, at least, were available. Occidental education, under the influence of Frederick, was obtaining new life. Universities were founded at Pavia and Padua in 1222 and Naples and Messina in 1224, following the lead of the older schools at Bologna, Montpellier, Oxford, and Paris. This renewed activity was sufficient reason for these surgeons to throw off the shackles of the practices of the alien enemy Orient, and, adopting the teachings of the ancient Graeco-Roman surgery as a foundation, to add to them the results of their experience gained in caring for the wounded crusaders and so found a new surgery to be carried on and improved by their pupils.



& cum instrumento separetur craneum undique circa plicaturam,



& cum terebello perforetur,



& totum craneum remoueatur. Reliqua de fractura crani prædiximus.

*De tineis cum euulsione capillorum curabilium, & incurabilium,
Caput XXVI.*

Tinearum alia curabilis, alia incurabilis. Incurabilis his signis cognoscitur, cutis est densa & dura, squamas multas emittit, pilos corredit, huius curam relinquimus. Eius uero quæ est curabilis duæ sunt medicinæ. Una pilos multos educit, & quosdam ualde grossos, & cutis est grossa tum continua non dura. Altera, non habet grossam cutem & scissam, non multo pruritu, & aliquando emittit saniem, sed in qua cunctis istarum sit cum hac cura medemur capillorum euulsionem.

Cura.

REcipe emplastri albi, picis naualis an. unc. i. nucum communium uncias sex, hæc terantur & in simul incorporentur bene ad modum ungenti, quod si fuerit opus in hyeme, extrahatur oleum ex ipsis nucibus, & ipso



The Surgery of Roland of Parma

ROLAND of Parma was an Italian surgeon who achieved great prominence during the thirteenth century. Some of this reputation was due to reflected glory from his master and predecessor, the great Roger, upon whose work his writings are based, some of them being copies word for word. Roland was born at Parma and spent part of his life there and part in Bologna, where he was a teacher in the great school. So far as is known he did not travel, but as the surgery of the Arabian School had already been brought to Italy he was able to study the translations made by Constantinus Africanus and add the teaching of the Arabian School to that of the Italian. His work attained great reputation in the middle ages, and was included in the Codex from which the lectures at the School of Salerno were given. It was called by a special name "Roldanina." The work of course existed only in manuscript form for many years and was first printed in 1499 as a part of the Venetian collection of Surgery "Collectio chirurgica Veneta." It was also included in the commentaries of the four masters in the "Collectio Salernitana." It was subsequently reprinted under the title

"*Humani Corporis, interiorum et exteriorum, morbis medendi ratio methodica, autore Rolando,*" by Henricus Petrus at Basle in 1541 as part of a later edition of the "*Collectio chirurgica Veneta.*" The reprint is divided into four books or chapters.

Looking over these old books brings up an interesting point with reference to the development of surgery. It is the synchronism between that part of surgery which at the time commanded the greatest amount of attention and the development in the art of making war. At first glance this may seem peculiar and far fetched, but more careful observation establishes certain phases in surgical procedure which go hand in hand with the forms and methods of warfare. When one examines a book on surgery of the time of Roland one finds the subject which receives the greatest amount of attention to be fractures of the skull and wounds of the head. This portion of surgery has reached a high standard when compared with others. This remains true for some years, and why?

Turning for a moment to the times we realize that this was a period immediately following the age of chivalry. Then knights in full armor carried on war. The weapons were the lance, the mace, and the battle axe, and the methods were those of the tournament and joust. The warriors were almost all mounted and the head was the part aimed at. Consequently, the majority of casualties were head injuries, contusions, concussions, and fractures. This type of trauma therefore made up a large part of the practice of the surgeon of the time and naturally this fact was reflected in his writings. A little later one finds the subject assuming major proportions to be that of wounds caused by darts and arrows, and history tells us of the improvement of the short bow of Hastings into the famous long-bow with its tremendous power for shooting arrows. Next in order is the invention of the harquebusse with its use of gunpowder and bullets, and the

works of the surgeons of the sixteenth century take up the surgical problems arising from wounds of this character: methods of probing for bullets; the invention of forceps for their removal; the ligation of injured vessels, and others. Surgery and warfare therefore proceeded hand in hand up to and including modern times.

It is necessary only to turn back to the literature of ten to fourteen years ago and read of the terrific compound comminuted fractures on the one hand and gas poisoning on the other to realize that there had been changes in the art of warfare; whether one wishes to classify these as improvements depends entirely on the personal viewpoint. So we find that Roland devotes his first book to the surgery of the head, in which he includes mania, melancholia, epilepsy, and diseases and injuries of the eye and nose. His knowledge of the important clinical signs in head injuries is considerable and his differentiation from a prognostic standpoint is keen, though of course his physiological basis is not particularly sound. Thus in his first paragraph he states that fracture of the skull may occur either with or without a wound of the scalp; that the wound if present may be large or small; but in any event the important thing is neither the wound nor the fracture but whether or not the coverings or substance of the brain are injured. He differentiates between lesions of the dura mater and pia mater. In injury to the dura he states that there is pain in the head, redness of the face, inflammation of the eyes, wandering of the mind, and blackness of the tongue. When the pia is injured, however, there are loss of consciousness, loss of voice, pustules on the face, blood and serum flowing from nose and ears, constipation, and when the injury is severe, a rigor of the body which is a certain sign of death. The work is interesting and in itself shows why Roland was considered a master in his time.



PART OF THE STOCKHOLM MS. FROM THE PRACTICE OF MASTER JOHN ARDERNE OF NEWARKE IN THE ART OF MEDICINE AND SURGERY. WILLIAM WOOD & CO., NEW YORK, 1922



The Surgery of John Arderne

DURING the later years of the Middle Ages, surgery was gradually passing northward through Europe. The returning Crusaders had probably brought with them from the Orient the surgical practices of the ancient Greeks, and Salerno, followed shortly by Bologna, had become the starting point of surgical teaching. Thence it spread northward, and the universities at Montpellier and Paris were founded and with these the non-clerical Collège de St. Côme where Lanfrancus of Milan taught the surgery which he had learned in southern Europe. It was only natural that the northward and westward march of the new medicine should continue across the English Channel to the British Isles and the foundation of the University of Oxford in England was the logical outcome. Gilbertus Anglicus and John of Gaddesden, the latter professor of medicine at Oxford, taught and wrote of medicine and included surgery, but their surgical work was little more than a compilation of that of the early Greeks with a smattering of the later Arabian, and England, in contradistinction to Italy with Lanfrancus, and France with its numerous surgeons, the most

outstanding of whom was Henri de Mondeville, had furnished no great surgeon. Then, to fill this vacancy and head a list of illustrious Englishmen came John Arderne. He was born just after the last crusade in 1307. Where he received his preliminary education we do not know nor does he tell us where he was trained in medicine but it can safely be taken for granted it was in one of the great continental Universities and probably in France for at this time Montpellier and Paris were the preeminent schools on the Continent and in close proximity to England. His preliminary education was good, for he wrote his surgeries in Latin which, for medical Latin, is excellent. That he received the complete medical training of the day, we may infer from the fact that he describes himself as "Chirurgicus inter Medicos," surgeon among physicians, which appears to mean that he became a physician with all the rights and privileges which that meant and then of his own volition, studied and practiced surgery. In 1346 we find him serving as sergeant surgeon in the army which, shipped to France in 1346, by Edward the Third, acquitted itself so well at Crécy. Here he obtained experience in the treatment of wounds. Upon his return he settled in Wiltshire and was there when the "Black Death" swept England in 1368. The following year, when 42 years of age, he moved to Newarke in Nottinghamshire and his name became inseparably connected with this location, for he is usually referred to as John Arderne of Newarke. He did not, however, remain in Newarke, for after having built up a great reputation as a surgeon and after having obtained a large practice, he moved to London, in 1370, and there, so far as is known, spent the remainder of his life.

Arderne's works have never been completely translated and printed. Some of the manuscripts have been made available,

however, and all show that he made his chief life work the study of the treatment of fistulae in various parts of the body and especially fistula in ano. One of the manuscripts, not written by him, but entitled "The Practice of Master John Arderne of Newarke in the Art of Medicine and Surgery" is dated 1412, and is in the library at Stockholm, Sweden. A photographic replica was made by the Wellcome Historical Museum. It was transcribed by Eric Millar, translated by Sir D'Arcy Power, and published by William Wood & Company, New York, in 1922. The illustration here shown is a reproduction of one of the pages in that publication and reveals an entirely new departure in surgical teaching, the application of the visual method. Anatomy and obstetrics had been illustrated previously and in the work of the Arabians, illustrations of instruments had been made, but this man illustrated the surgical lesion and endeavored to teach by visualization of the living pathology itself. This method, as surgical teaching has gradually advanced, has been elaborated until today it is the basis upon which pedagogic methods rest. The discoveries in the allied sciences of physics and electricity have been adapted to our uses today. The microscope, X-ray, and electrically lighted instruments of visual precision play a great part in surgical diagnosis. The constant effort has been, and is, to see the lesion, wherever it may be situated, and to this man who lived more than five hundred years back, we must give the credit of having had the ingenuity to recognize the value of this method of transferring his ideas to others.

Arderne's greatest achievement in operative surgery was the evolution of the radical operation for fistula in ano. By means of special instruments he split the tract and laid it wide open. Sometimes he did this with a cutting string which he called

"Frenum cesaris" and sometimes with a knife, but always the fundamental idea was the same, wide opening of the tract, with subsequent healing from the bottom of the wound. Thus he was the originator of the modern operation for fistula in ano.

He laid great stress on the knowledge of anatomy and the anatomical drawings in the manuscript are excellent for the period. But in spite of his accurate knowledge of some surgical conditions he still believed in the mystic and supernatural, and the use of charms and incantations are frequently advised as herapeutic measures.



The Surgery of Hieronymus Brunschwig

HE noble exeryence of the vertuous handywarte of surgeri, practysyd and compyled by the moost experte mayster Iherome of Bruynswyke, borne in Straesborowe in Almayne, ye whiche hath it fyrst proved, and trewly founde by his awne dayly exercysynge. Item thereafter he hath authorysed and done it to understande thrugh the trewe sentences of the old doctours and maysters very experte in the scyence of Surgery, As Galienus, Ipocras, Avicenna, Gwydo, Haly abbas, Lancfrancus of mylen, Iamericus, Rogerius, Albucasis, Place(n)-tinus, Brunus, Gwilhelmus de saliceto, & by many other maysters whose names by wryten in this same boke. Here also shall ye fynde for to cure and hele all wounded me(m)bres, and other swellynges. Item yfe ye fynde ony names of herbes or of other thynges whereof ye have no knowledge, yt shall ye knowe playnly by the potecarys. Item here shall you fynde also for to make salves, plasters, powders, oyles, and drynkes for woundes. Item whoso desyreth of this science ye playne knowledge let hym oftentymes rede this boke, and than he shall gette perfyte understandyng of the noble surgery."

CThe noble experyence of the vertuous
handy Warke of surgerie practysyd & compyled by the moost experie may-
ster Iherome of Brwynswyke borne in Straesborowbe in Almayne / v whiche hath it fyrt pro-
ued / and trewly founde by his awne dayly exercysynge. ¶ Item there after he hath authoryzed
and done it to vnderstande throught the trewe sentences of the olde doctours and maysters very
experie in the scyence of Surgery / As Galienus / Iporcas / Aucenna / Gwydo / Haly abbas /
Lancianus of mylen / Jametius / Rogerius / Albucasis / Placetus / Brunus / Gwilhel-
mus de saliceto / & by many other maysters whose names be wryten in this same boke. ¶ Here
also shall ye synde for to cure & hele all wounded meches / and other swellynges. ¶ Item vii re
synde ony names of herbes or of other thynges wherof ye haue no knowlege / v shall ye knowe
playnly by the potecarys. ¶ Item Here shall you synde also for to make salues / plasters / pow-
ders / oyles / and drynkes for woundes. ¶ Item who so desyreth of this science v playne know-
lege let hym ostentynes rede this boke / and than he shall gette perchyde vnderstandinge of the
noble surgery.



TITLE PAGE OF THE ENGLISH EDITION OF BRUNSWIG'S SURGERY
SOUTHWARK, PETER TREVERIS, 1525

Jerome of Brunswick was an Alsatian army surgeon who was born about 1450 and died in 1533. The English edition of his work bearing the above title was printed at London in Southwark by Peter Treveris, March 26, 1525, and has the distinction of being the first illustrated work on surgery printed in the English language. The German, or first, edition was entitled "Dis is das Buch der Cirurgia. (Hantwirchung der Wundartzney), von Hieronymo Brunschwig, Strassburgk, Johann Gruninger, 1497." This edition has been reproduced in facsimile, with explanatory text by Gustav Klein and published by Carl Kuhn, München, 1911. The English edition was adapted from a translation of the German incunabulum into low Dutch. Consequently it is not a true translation as much of the material of the original has been left out. Many of the interesting illustrations are omitted but the gist of the work remains.

In his prologue Jerome warns against the barber surgeons and offers advice to students and young surgeons which is of as much value today as then. His summing up of the value of consultation will bear repeating. "Fyrst ye lerne by chaunce that thyng that ye seldon or never have sene before. Seco(n)darily yf ought in your handes happen to mysfortune that ye other may quyclly than amende it. Thyrldly that the wounded parson have ye lesse grudge or mystrust in you. Fourthly, wha(n) the cure hath good sped tha(n) be ye parttaker of all the honour thereof & if ye mysfortune fall bytwene your handys than be they bou(n)de every man to bere the charge of your hynder and losses which were to moche for you alone. Fyftly for this wyse dede ye be praysed of all them that be discrete or lerned men yt speke of you which say he desyreth to lerne and wyll not that any man sholde be by hym neglygently spylt or peryshed and thus may

ye come to your pourpose with honesty and pleasure which
ellys might tourne to your grete shame and dyspleasure."

The work itself may be divided into three parts. The first, as is usual in the majority of old surgical works, is a review of the then known anatomy of the body, and the necessity of a comprehensive knowledge of anatomy is stressed in the prologue. The second part includes the surgery proper. Being the work of an army surgeon, it deals with wounds, fractures, and dislocations only. His account of gunshot wounds is the first detailed account in medical literature. Preceding each of the three divisions, wounds, fractures, and dislocations, is a description of the treatment of the condition in general. Then follows the classification of the various types of each and a description of the treatment applicable to each type. The suture of wounds is carefully described and several forms of suture noted. Haemorrhage is also spoken of, and, though the ligature of vessels is usually attributed to Paré, Jerome describes it accurately and states, that, when feasible, it is the best way of combating haemorrhage, reserving other methods such as pressure, styptics, and cautery for oozing wounds. As this book was published in the German edition before Paré was born, it is probable that Jerome, through his study of former authors, rediscovered the method and Paré later applied it to the treatment of vessels in the amputation stump and popularized it. He says: "The fourth maner is that somtyme a stychynge or festynynge happeneth for to stau(n)che blode and that is when ye se a vayne blede sore as the vayne of the neck or ye wou(n)ded betynge vayne, thrust that vayne through with the nedyll and after the nedyll knet the vayne fast with ye threde that is in the nedyll & then drawe the nedyll through and let an ende of the threde byde ha(n)gynge at it a certain dayes tyll that upper part of the vayne doth

putrify and that ye thred go out by hymself.' He warns against leaving dead spaces in sutured wounds and advises against allowing wounds to heal before suppuration and pain have disappeared.

In the same general way fractures and dislocations are taken up and classified. Many interesting pieces of apparatus for the reduction of deformity and immobilization of fractures are illustrated. A study of these shows plainly that the general principles of reduction and immobilization of fractures were well understood by the author. The third division of the work, the antidotharium, describes in detail the method of making the various plasters, ointments, etc., recommended for use in the text.

Jerome of Brunswick, was evidently one of the foremost surgeons of his time. He refers in his work to the masters of previous periods and was evidently a student. He had studied in Bologna, Padua, and Paris and reading of his work shows him to have been a most careful observer and a clear thinker who was able to draw deductions from his observations which were far in advance of his time.

Feldbüch der wundartzney.



Wit Keyserlicher freyheit getruckt zu Straßburg durch Joanne Schott.

TITLE PAGE OF THE FIELDBOOK OF SURGERY. STRASSBURG, JOANN SCHOTT, 1517



Hans von Gerssdorff, The Field Book of the Treatment of Wounds

THE latter part of the fifteenth and beginning of the sixteenth centuries saw much more attention paid to the care and treatment of wounds; and surgeons whose province it was to care for the wounded, were attached to the armies in the field. Jerome of Brunswick had written his surgery in 1497 and thus opened the way for amplification of methods. In 1517 Hans von Gerssdorff, called Schylhans, who describes himself as a citizen and wound treater of Strassburg, published his "Feldtbuch der Wundartzney" which was printed in Strassburg by Joann Schott. It was illustrated by many woodcuts attributed to Hans Pilgrim known as Waechtelin. Some of these are original while others seem to be more careful drawings and better prints of the illustrations of Jerome's surgery.

The Feldtbuch contains the first known illustration of an amputation. The patient is seated in a chair. The leg which is being amputated is being held by an assistant. Two cords are wound tightly around the leg, one above and another below the site of amputation but the blood is shown pouring in streams from two holes in the proximal stump. A patient whose left hand is

bandaged stands calmly watching the procedure while the surgeon wields the saw.

The legends to the illustrations are all in poetry and many of them are extremely complimentary to Gerssdorff who apparently had no intention of hiding his light under a bushel. The legend over the amputation illustration reads:

“Arm bein abschniden hat sein kunst
Vertriben sanct Antonien brunst.
Gehort auch nit eim yeden zu
Er schick sich dan wie ich im thu.”

Translating the German doggerel into a similar English the quatrain might read:

To cure St. Anthony's fiery smart
Removing arms has certain art
Which is not in all men 'tis true
So send your case to me to do.

To be sure Gerssdorff had a good excuse for this self esteem, for he states he had performed between one and two hundred amputations, probably many more than any other surgeon up to that time. He says that he has heard that giving patients drinks to make them sleep makes them delirious. So in his amputations, he has never given drinks, but describes a method of using opium, gradually given, which causes sleep. This is practically the method of Hugo of Lucca which was described by Theodoric and used by Guy de Chauliac. He then wakes his patient by the inhalation of vinegar. He does not ligate vessels in the stump but uses the cautery or caustic plaster to check the bleeding. The stump is enclosed in the bladder of a bull, ox, or hog applied wet over the dressing so that as it dries it will exert an even pressure and check hemorrhage.

Another interesting illustration is that of the "wound man," a later evolutionary type of the old zodiacal diagrams, which shows different wounds and the various implements which cause them. These wounds are placed at the proper positions for blood letting or ligation of vessels. The legend over the illustration reads:

"Wiewol ich bin voll Streich un(d) Stich
Zermorsscht verwundet iamerlich
Doch hoff ich Gott kunstlich Artzney
Schylhans der werd mir helfen frey."

When I am stricken hip and thigh
Or wounded grievously do lie
I hope that God will bring to me
Schylhans' artistic surgery.

Gerssdorff places great stress on anatomy. This portion of the book is illustrated by a plate of the opened torso attributed to Wendelin Hock and probably engraved by Waechtelin called Pilgrim and a skeleton which is commonly known as the Waechtelin skeleton. In the surgical portion of the work he emphasizes constantly the fact that the surgeon does his work with his hands. The very definition of the word shows this as he says: The name Chirurgicus springs from chir in the Greek tongue which means a hand and gios, using; hence a surgeon is a hand worker or wound physician.

Among other things Schylhans made and illustrated a trivalve speculum for use in the vulva and anus which is an improvement over the bivalve speculum illustrated by Jerome of Brunswick, though much like the specula found in the ruined cities of ancient Graeco-Roman civilization.

In addition to the classification of wounds and fractures and their treatment he classifies the various medicaments used

according to their action and defines such action as styptic, sedative, etc. He adds a *materia medica* and the proper dosage.

Gerssdorff takes up other common diseases in addition to wounds. He discusses fistula and carbuncle. The pestilence he calls anthrax. Cancer and leprosy he considers incurable but gives methods of treatment which he calls palliative. Ergotism he describes as "ignis sacer" or St. Anthony's fire and pictures a sufferer from it holding up to St. Anthony a gangrenous hand which has burst into flame, and appealing to him for relief. For the cure of severe cases Gerssdorff advises amputation.

The beautiful wood cut on the title page represents the patron saints of medicine, Sts. Cosmus and Damianus, after the first of whom the famous surgical "Collège de St. Côme" of France had been named.



Jacob Berengarius of Carpi, Concerning Fracture of the Skull

METHODS of warfare have always greatly influenced surgery, especially in early times when the surgical therapy practiced by the educated surgeon was confined principally to the relief of the results of trauma. The manner of life of the people of the time also has an influence on the types of surgical injury met with; so it is only to be expected that a surgeon of prominence of the latter part of the fifteenth and the beginning of the sixteenth centuries should find a very fertile field in injuries of the skull. Wars were very frequent during this period but these so-called wars were little more than riots or uprisings of untrained mobs of hired ruffians armed with clubs, lances, or whatever they could find, against whatever feudal lord seemed to be able to offer the least resistance for the time being. Following a successful attack and capture of a castle or town, the soldiery immediately became unmanageable and the place was sacked. The inhabitants were promptly either murdered or beaten badly and left where they lay to be buried if dead or cared for by the surgeons if still living. The period ushered in by Lorenzo the Magnificent in Southern Italy, in spite of the rise of

*Chirurgie olim in Bononiensi Academia
Professoris celeberrimi.*

DE
FRACTURA
CRANII
LIBER AVREVS.

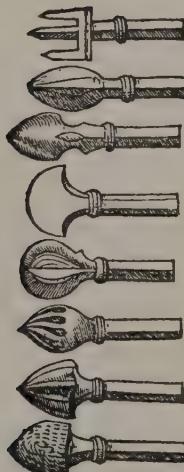
Habemus desideratus.

Editio nova, ab innumeris mendis
vindicata.



LUGDVNI BATAVORVM,
Ex Officina IOANNIS MAIRE,
clo Id. c. XXIX.

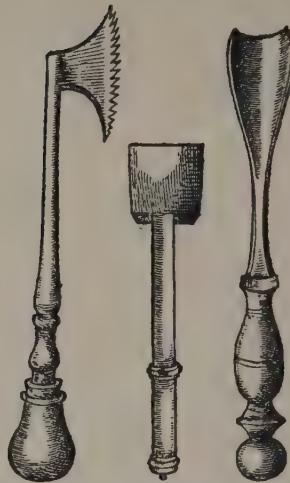
(A)



Sunt præterea octo alia species ferramentorum, hic ut vides, depictorum quæ itidem *terebra* appellantur, inque eodem receptaculo (hoc est, in primo instrumento) ponenda sunt, prout videtur operanti. Formam cuiuslibet speciei vides hic. Porro, ut prius dixi, de qualibet specie ad minus sunt habenda quinque instrumenta; scilicet minima, parva, media, magna, & maxima.

Sciatur vero Chirurgus ex istis octo instrumentis non nisi quinq[ue] apta esse ad operandum, ubi est prius aliqua fistula in cranio, propter ipsum formam rectam linearem. Nam linea recta ferramenti esset in directo fractus precipitaretur cum supra paniculos, &

(C)



Sunt ultra predicta instrumenta alia quatuor, ut hic videbis, quorum unum est ad formam ferre, quæ a lateribus est aspera, rotundis ultima, ut hic vides.

Alterum ferramentum dicitur Scalprum rectum, sive Scalpellus, estque aliquiliter

cos-

(B)

Sequitur aliud instrumentum quod *drawrius magnum* appellatur: quo nimur ad elevanda osse depresso, cujus extremitas popinatur sub oste, & elevatur os quantum intendit operator.

Sequitur aliud ferramentum, quod dicitur *rostrum acipitrinum*, cum quo etiam elevantur ossa ubi opus est, ut hic vides.



T Sunt

(D)

A. TITLE PAGE. B. SAWS AND GOUGES. C. DRILLS FOR PERFORATING THE SKULL. D. ELEVATOR AND HOOK FOR RAISING BONE FRAGMENTS

art in many forms, was also signalized by the splendor of its entertainments and its great luxuriousness and pursuit of pleasure by people in general. When one considers that in those days pleasure consisted largely in banquets at which there was drinking to great excess the inference that broken heads were a common sequence is not difficult to draw. The opportunities therefore for study of injuries of the skull were great and Berengarius' treatise is the result of his intensive study of this department of Surgery.

Jacob Berengarius was born at Carpi, probably during the third quarter of the fifteenth century, but the exact date of neither his birth nor death is known. The son of a physician, he was early inducted into medicine and became interested particularly in anatomy in which he followed the then authority Mundinus though he did much practical work himself, for he says in the introduction to his anatomy that he had opened many hundred bodies. Also he was recognized by Gabriel Fallopius as the greatest anatomist up to the time of Vesalius. He pursued his early studies in Rome where he met and gained the patronage of Albertus Pius, Count of Carpi. Desiring further knowledge in anatomy and surgery he went to Bologna and there obtained his doctor's degree. His continuous studies and, we may judge, his successes in his work gave him a great reputation as a surgeon particularly in skull injuries for he was sent for from different parts of Italy to consult and operate on this type of case. He tells in his discussion of the symptoms of bone (depressed) injuring or puncturing the dura and brain how this accident happened when he operated upon Lorenzo de Medici, Duke of Urbino, who had been injured at the storming of the castle of Mondalfo. It seems that when he trephined, a piece of bone slipped between the skull and dura and he did not have the proper

instrument with which to get it out, but he goes on to say "Nevertheless the Grace of God aiding, the bone was drawn out and health restored." Through his wide reputation Berengarius achieved the notice of many of the great men of his time in Italy for he is mentioned by Vasari and Buenvenuto Cellini, and held, in his part of Italy, a position comparable to that of his contemporary, John de Vigo who practiced in Rome. It was only to be expected that he was given the professorship at his alma mater at Bologna and this he held from 1502 to 1527. He then went to Ferrara and probably died shortly after 1530.

Though Berengarius was celebrated as an anatomist and also as one of the first to use mercury by inunction in syphilis, his major fame rests on his work in injuries of the skull. The treatise first appeared in 1518 carrying the title "Tractatus de fractura calve sive cranii a Carpo" etc., and was reprinted at various intervals in amended and amplified form for nearly two centuries, the last edition appearing in 1715. The edition illustrated is one of the most complete, that of 1629 entitled "The Golden Book concerning Fractures of the Skull of the most Celebrated Jacobus Berengarius of Carpi at one time Professor of Surgery in the Academy of Bologna. Hitherto desired. A new Edition freed from many errors." According to both title and preface the book was hard to get for the writer of the preface says—"We give you, benevolent reader, this book of Jacobus Berengarius concerning fractures of the skull, a work up to the present seldom seen but desired by many." As it had gone through three editions up to that time it must have been one of the most outstanding authorities to require reprinting over a hundred years after its first publication, and a reading of the volume confirms this conjecture. Berengarius divides his work into two major parts; the first, the causes from which the different types of

fracture arise and the reasons why the various names were given to them. For example he enters into a discussion of the fracture by contre coup. The second part treats of the symptoms, prognosis, and treatment of the different varieties of fracture and illustrates the instruments used and types of trephining. These parts run one into the other and at times both are discussed together so the divisions are not distinct. He refers to the great authors of antiquity and cites their opinions, often with praise and always with respect. A little study of this book will increase the reader's admiration for the amount of knowledge Berengarius had been able to acquire.

Der Frawen



(A)

Der Frauwen



(B)

Der Frawen

Mann als Albertus mar
gnus spricht vnd auch vorge
lge ist / so hat d^r kind in mä
ter leib vor der geburt vñ ee
es sich schrybt / sein angesicht/
vnd sein brust gegé seiner mü
ter rückt. Vñ zu der zeit der
geburt / so schrybe vnni überw
ürft sich das kindt gegené sei
ner müter rücken / das haupte
vndersich zu vßgang vnd
die füße überstich. Darumb
in vßgang des kindes / kumpe
des kinds angesicht vber sich
gegé die angliche syner müter

Zu de dritte / so die zeit
der geburt hie ist / so sol in nas
türlicher geburt / der vßgang
des kindes behend vnd riig
sein on merclich verlegerig
Aber das heist die vnnatürlic
h geburt / die nie geschichtet/
wie jeyzund gesagte ist. Doch
spricht Au: cina / wād^r kindt
vñ müter leib kommt zü erste
mit den füessen / vnd hat sein
arm / sein händt nebē seine foy
en hinab vff die dicke d^r buit
gestreckt (als in dieser figur
bezeichnet ist) Das soliches ei
van artlich geburt sie doch
fer sie aller gleichest der nas



(C)

Der frawen



(D)

Wo aber die zwyl
ling kömen mit da
süessen / Sol sie ab
malet hän flach an
ten / eins nach de au
tern / schüren an / mö
gen als obstadt.

So aber der zwyl
ling ei
ner kompe mit de haupe/
der ander mit den füesse
Soll abermals die heb
am füss ankerdem neck
sten zü erste blassen vñ
d^r ander nit blassen vñ
das soll also geschehen / on
quezung ir beyde.



A. THE AUTHOR PRESENTS HIS BOOK. B. THE METHOD OF EXAMINATION. THE PATIENT
IS ON "THE OBSTETRICAL CHAIR." C. & D. PAGES SHOWING "BIRTH FIGURES".



A Rosegarden for Pregnant Women and Midwives

THE practice and knowledge of obstetrics was one of the most neglected fields of medicine during the middle ages. So-called obstetrics consisted in neglect of normal cases and butchery of abnormal. It was considered beneath the dignity of the physician to care for an obstetrical case even as a consultant and the false modesty of the times precluded his active participation in the delivery. Consequently, the management of the patient was left in the hands of, for the most part, ignorant and untrained midwives, and the physician was called in only to care for hopeless cases and this care usually consisted of mutilation of both mother and child. Knowledge of the anatomy of the female generative organs was very meager as shown by the anatomical fugitive sheets of about 20 years later. The anatomy of the fetus and fetal membranes was handed down through the works of Hippocrates, Galen, Rhases, and Avicenna and the illustrations in the various codices which followed the Soranus-Moschion form of the uterus and fetus which were far from correct, though they show that the various positions of the fetus in utero were known clinically.

The time was propitious for an adequate study of obstetrics and by this to initiate an attempt to decrease the mortality of women during childbirth. This opportunity was grasped by Eucharius Roesslin, the elder, a physician of Worms-on-the-Rhine and Frankfort-on-the-Main who died in 1526. He was also called Rhodion. In 1513, he published his book, which he called "Der Swangern Frauen und Hebam(m)en Rosegarten"; A Rosegarden for Pregnant Women and Midwives, which became the outstanding authority on obstetrics for over a century and was republished, somewhat altered as time went on, in various languages. Its best known form is as "The Byrth of Mankynde" by Thomas Raynalde, 1545 et seq.

The name of Roesslin's book has been an enigma and several explanations for it have been offered. Some have said that it was used as a play upon his name Roesslin or Roeslein, which means a little rose rather than a little horse. Others claim it was so called because of the beautiful Rose Garden of Worms, his native city. The 1513 edition, printed in German, is a very rare volume and hence little known until it was reproduced in facsimile as one of the series of the works of "Old Masters in Medicine," and appeared in 1910 published by Carl Kuhn, Munich. This reproduction is accompanied by an explanatory text by Gustav Klein. In it Roesslin has written a portion of his preface in poetry and in the poem gives his reason for the name.

"Findt ir nutz und gute lere
Beger ich von euch hie nit mere
Dan(n) das mein werd in eren gedacht.
Das ich den garten hab gemacht.
Zic trost und freud weipliche(n)geschlecht
Noch weitrem lon ich doch nit vecht
Und ob den solichs nit wurdt gthon
So hoff ich doch von got den lon."

Translated rather freely this may be rendered:

I hope from you but little more
Than you find mete and proper lore,
And that a garden now has grown
From words by you with honor known.
For pay, I trust that I may see
That women safe and happy be,
But if such pay I am not given,
Then I must get my pay from heaven.

One of the full page illustrations shows a woman, accompanied by two others, in a garden receiving a copy of the volume from the author. (See illustration.)

The book itself is a simple and rather short compend of the subject of obstetrics. Throughout, it can be seen that he is writing for the information of midwives who apparently do all the manipulation of the actual delivery and the physician is only the consultant. He explains the usual position of the fetus in utero and describes the fetal membranes, which he says are three in number. The fetus is described in the "see, speak, and hear no evil" position as the normal. He divides births into natural and unnatural according to the position of the fetus, and considers the breech presentation as the most simple of the unnatural births. Later, under the management of labor, he gives detailed directions for the delivery of breech and foot presentations, and describes podalic version, which he probably got from Soranus and which was later popularized by Paré. He likewise describes cephalic version, which he prefers. He advises waiting until the membranes bulge widely before puncturing them and gives early rupture of the membranes as one of the eighteen reasons for a difficult birth. For easy delivery he places great value on lubrication of the birth canal with various oils and salves used both manually and internally given by mouth. He believes

in careful preparation of the mother for delivery as an important factor in an easy birth. The directions for exercise, diet, and care of the bowels are clearly laid down in detail. Throughout the entire book the desire to make the burden of the parturient woman as light and as easily borne as possible can be seen. As later, Oliver Wendell Holmes and Semmelweiss blazed the way for the avoidance of puerperal sepsis so Roesslin made the plea for care and not neglect of labor. The belief that the fetus breathed through the vagina is shown by the directions for holding the "mouth of the uterus" open should the mother die, until a caesarean section, which he advises under such a contingency, can be performed. His method of stimulating pains is rather heroic as he advises making the mother smell powdered hellebore or ground pepper to cause sneezing and so increase the abdominal contractions.

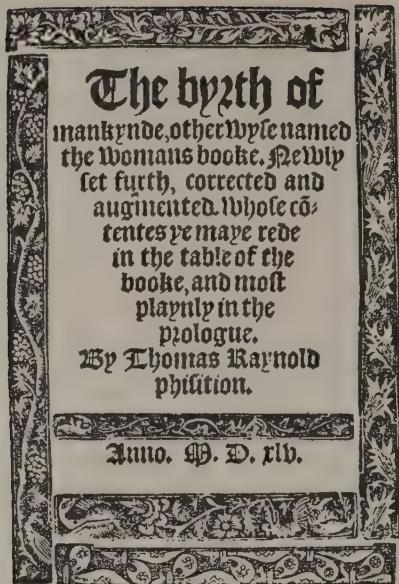
The final chapter of the book is divided into thirty-six parts, each of which treats of a different disease of the newborn child. So this portion of the work may be said to be a special work on pediatrics.



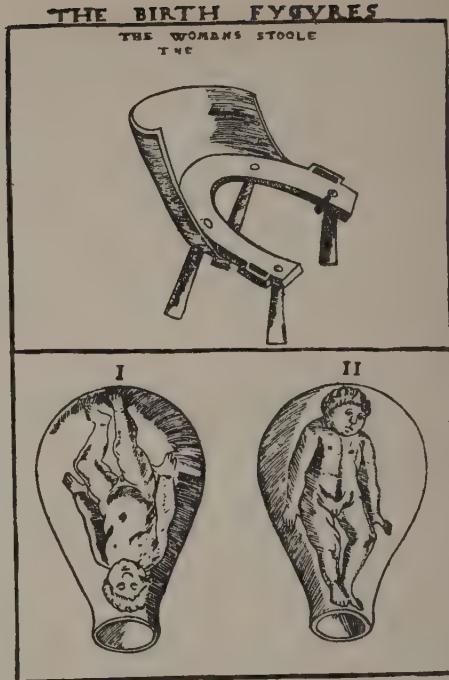
The Byrth of Mankynde

IN SPITE of the fact that the minds of the English people had been centered on the desire for an heir to the British throne since the early years of the sixteenth century, and this same desire must have been present in the medical profession as well as the laity, no strictly medical attention had been paid to the science of obstetrics. The only record of obstetrical literature of the period is that a fifteenth century manuscript exists in the British Museum but so far as known had not been printed at that time. It is interesting to follow the story of Henry the Eighth and speculate on the origin of the most famous work on obstetrics in the English language which held its pre-eminence for over one hundred and thirty years.

Henry the Eighth, he of the many wives, in the early part of his reign married his brother's widow, Catherine of Aragon. Their child was a girl, the Lady Mary, and after the king despaired of a male heir he finally divorced Catherine and in 1533 married Anne Boleyn. This marriage also failed to produce a male heir and in 1536, after a trial in which Anne was found guilty of adultery, she was condemned to death and beheaded.



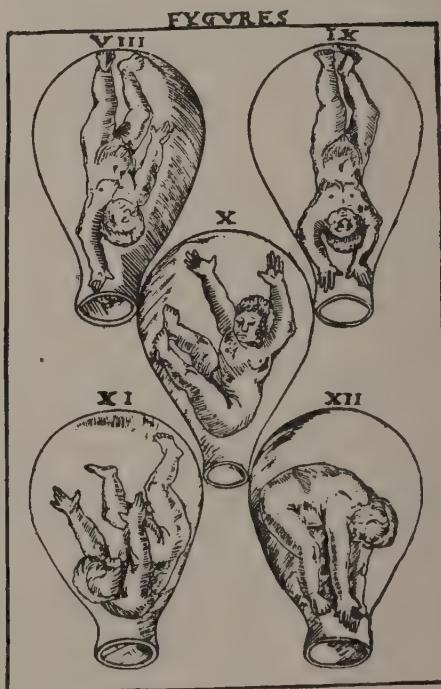
(A)



(B)



(C)



(D)

A. TITLE PAGE OF THE FIRST RAYNOLD EDITION. B. ABOVE IS THE OBSTETRICAL CHAIR.
BELOW. THE FIRST TWO BIRTH FIGURES. C. & D. BIRTH FIGURES

The following day Henry married Jane Seymour who in 1537 gave birth to Edward the Sixth. There was great rejoicing that after a wait of twenty-eight years an heir to the throne had arrived but there was subsequent sorrow when, twelve days later, the queen who had produced this heir, died of puerperal fever. Did this series of events turn the minds of British medical men to the necessity for the study of Obstetrics? The fact that it was but three years later that the "Byrth of Mankynde" first appeared makes such a supposition at least tenable even if not correct.

As this question of the origin of the book is but a speculation so there is a mystery in the book itself. Its author is not known definitely and there is likewise ground for disagreement as to the printer. The first edition appeared in 1540. It was a translation into English of the Latin form of "Roesslin's Rosegarden" (1513) and appeared under the title "De Partu Hominis." The claim to this English translation is made by one Richard Jonas and it was printed by one T. R. who was probably Thomas Raynalde, a well known printer of the sixteenth century who 'dwelt in St. Andrew's Parish, in the Wardrop, and kept shop in St. Paul's churchyard.' To this edition Thomas Raynalde the physician had no claim for it is very doubtful if Thomas Raynalde the printer, and Thomas Raynalde the physician, were the same. In the second edition, that of 1545, Richard Jonas drops out of the picture except for anonymous mention in the prologue and Thomas Raynold phisition, whose name appears on the title page as the author, enters. He claims no originality for the book for in the prologue he says "Wherfore now to come to oure pourpose ye shall understande, that aboughth a thre or foure yeres passyd, a certayne studious and diligent clarke, at the request, and desyre of dyvers honest and sadde matrones

beynge of his acquayntaunce, did translate out of Latin in to Englysshe a greate part of this booke, entytlinge it accordyng to the Latine inscription (*de partu hominis*, that is to say of the byrth of mankynde) which we do nowe name (The woomans booke).'' He then states that this translation which was in his possession did not vary from the original Latin but that he, Raynolde, was changing it somewhat. The changes or additions appear to be mostly in the anatomy which seems to follow that of Vesalius who had published his "De corporis humani fabrica," in 1543, which was in direct contradiction to the then prevailing Galenic anatomy. In the table of the first book he refers to eleven anatomical figures which are copper plates that follow the Vesalian anatomy. The other illustrations are copper plates depicting the "woman's stoole" or obstetrical chair and the seventeen "birth figures" which follow Roesslin very closely and, like the text, were probably copied from his Rosegarden. Roesslin, in turn, had obtained them from one of the early manuscript copies of the obstetrical work of Soranus of Ephesus who lived in the second century A.D. This work had been passed down through the centuries by means of the various Soranus-Moschion codices and was the authoritative work on obstetrics up to the appearance of the Rosegarden. These copper plates are poorly executed and are not by the same engraver as the "Geminus" plates. However, as they appeared in the Jonas edition of 1540 they have the distinction of being the first copper plates printed in England.

The book is printed throughout in black letter and contains 149 pages. In addition to the anatomy and description of positions of the fetus and the care of labor, it contains many recipes and directions for the cure of various complaints scattered through it, among others "to keep and preserve the teath

cleane"; "Of stykyng breath," and other conditions due to bad personal hygiene.

Written rather for the laity and midwives than for the medical profession nevertheless the book held its position as a foremost authority on obstetrics for over a century. It was reprinted often and the final edition in practically unaltered form appeared in 1676. Since then parts of it have been included in the household medical books which were so commonly published during the last century and if one reads one of the volumes of this type published in England he will find that much of the material devoted to obstetrics is either an adaptation of or a direct quotation from the Birth of Mankind.

LIBER PRIMVS DE
GENERATIONE HO-
MINIS.

CAPVT I.

De genitali semine, quid sit, vnde & quomodo nascatur.



Procreationem naturalem homini, talem eminē obserua-
mus, quem omnī generū stirpium generationem ani-
maderitimus. Ut enim illa ex semine sūi quoque generis
telluris commissio, germinant, augentur, & ad perficiam
sua naturae formam naturae littere ex crescunt: ita bono quo-

A que

(A)

QVARTVS.
LIBER QVARTVS.
DE FARIETATIBVS NON NATY-
GALI PARTU, & CARNEM CARU.

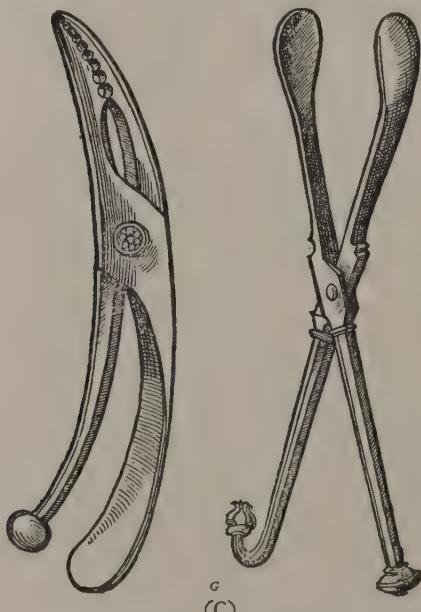


(B)

TERTIVS. 25

Rostrum arcana

Forcips longa & terfa.



G
(C)

L I B E R

23. Anno 1512. Ravenna
monstrum natum est, quod
habet cornū in capite, alas
duas, brachia nulla, pedes
vincit ut omni rapax, oculū
in genū, sexum verumque,
in medio pelvō cōsilium
& cruci effigiem. Hoc aliqui-
fic interpretariunt: Cornū
portendere superbiā: alas:
leuitatem & inconstitiam:
carentiam brachiorum, de-
ficiūm bonorum vperum:
pedem rapaciam, rapinam,
vfatam & auaritiam omni-
modum oculū in genū, fo-
lum ad res terrenas & scelū:
sexum virum, Sodomiam,
Propter hoc autem peccata
Italiani sic ex tempore belli-
cū contritionibꝫ affligi. T vero virtutu & lignum eſe, fatus: quare si vi-
tissimum reūlū, ad virtutes & ad Christi crucem, id est, unicū eius recu-
rsum meritum, reparationem & pacem denuo inventuros esse. Sicutem au-
tem hic Ludouico, Galeriu[m] rege, sub Iulio 11. pontifice Italianum vestiente.
Rob[ertus] M[ari]us in Aphorismu particula 23. sic scribit: In Siciliā accidit
Eclipsi soli magna, & illo anno mulieres filios deformes incipere peperi-
re plurimos.

Quarū hic, Virtutum bruta conceperit ab hominibꝫ, vel etiam
vicitim homines a bruta. Hoc autem fieri posse rōbustū affirmamus ratione-
concepimus. Primo naturali appetitu. Secundo, pronocatione natura ex delicto-
ne. Tercio, virtute attractiva matris, que in bruta & hominibꝫ similitudine
est. Exemplar primum sunt. Pluricibus enim in Parallela minoribꝫ hoc
habet: Arifontus Arifontus Epibei filius Demostrati, cum edisset mul-
ter, cum agnacem habuit, qua tempore resuens puerum formosissimum
deperit.



(D)

A. THE ADAM AND EVE MOTIF—DEATH IN THE TREE. B. CASTING THE HOROSCOPE OF THE
FUTURE CHILD WHILE THE BIRTH PROCEEDS. C. OBSTETRIC FORCEPS.

D. THE RAVENNA MONSTER



The Obstetrics Booklet of Rueff

THE practice of obstetrics in the early part of the sixteenth century had not kept pace with other medical branches and was still in the hands of ignorant midwives and charlatans. Eucharius Roesslin had done his bit to try to raise its standards with his "Rosegarden" but, though the volume passed through many editions, little was accomplished. The time was ripe, therefore, for a new book on obstetrics. This was seized upon at only a few years' interval by two men in two countries.

The first of these was Richard Jonas of England who was succeeded by Raynold. The second was Jacob Rueff of Zurich, Switzerland who in 1544 published "A very cheerful booklet of encouragement concerning the conception and birth of man and its frequent accidents and hindrances, etc.,," at Zurich, and a second edition appeared in 1559. Why the volume should have been called "cheerful" it is hard to understand as it is anything but that, but there the title stands: "Ein schön lustig Trostbüchle, etc." An edition printed in Latin appeared the same year, 1554, in which the title reads, "Concerning the conception and generation of man, etc." Shortly after the author's death in

1558 the incongruity of the original German title was apparently recognized and the book was reprinted at Frankfurt a. Main in 1580 under the new German title "Midwives' Book from which one is taught all the secrets of the female sex, etc." In the same year, 1580 a new Latin edition was published in Frankfurt a. Main bearing the former Latin title "De Conceptu et Generatione hominis etc." The book remained extant for over a hundred years, the last edition being printed at Amsterdam, Holland in 1670. I have examined the Latin editions printed at Frankfort, in 1580 and 1587.

When one reviews Rueff's life and his manifold activities, one at first wonders why he happened to write a work on obstetrics, but looking the book over carefully seems to answer the question. This answer will be referred to later. Where he was born is in doubt; some authorities say in the Rhyntal; others in Württemberg. When he was born is unknown as is also the date when he came to Zurich and settled there. He was prominent in many fields. He wrote astronomical notes for an almanac and furnished the charts for blood letting. He was a popular poet and folksong writer. He was also a great enthusiast for religious freedom, so much so that he served twice (1529, 1531) with the troops of Zurich against the Catholic cantons. He was likewise a dramatic writer and in 1535 his play "Hiob" was produced and in 1545 his "Wilhelm Tell." He seems also to have been well known in medicine, in Zurich at least, for in the almanac he is described as surgeon and lithotomist of Zurich. In addition to his obstetrics he wrote a little book of 59 pages on tumors which was published in Frankfurt in 1556 and republished in Amsterdam in 1648 and 1662.

The book follows the "Rosegarden" fairly closely, but Rueff amplifies it somewhat. Like Rhodion he advises cephalic in

addition to podalic version and describes its performance in detail. He advises and illustrates both toothed and smoothed forceps for the extraction of the dead fetus, but does not advise their use on the living child though the smooth forceps (see illustrations) look as if they could have been used successfully for a low forceps delivery. The various types of abnormal positions of the fetus in utero (some of them imaginary) are illustrated and serve to show that the author knew the commoner malpositions. He gives detailed treatment of each type of abnormality.

It is in that portion of the book devoted to monsters that his desire to write the book seems to explain itself. When one remembers the man was a religious zealot it appears almost self evident that here was his opportunity to apply this phase of his character to medicine. At this time the theory that the devil worked his will on pregnant women was rife. The great Luther himself believed that the devil substituted changelings for normal children and gave the signs by which they might be recognized. But more than that these changelings and monsters came as the punishment for sin. So Rueff devotes ten pages of his book to their illustration and description. How better could he help to save the people from sin than to give the backing of science to the penalties of religious error? He illustrates first the intra-uterine amputations, authentic without doubt. Then double headed and double bodied adults and infants; Siamese twin anomalies; the remains of fetal inclusions such as a head protruding from the abdomen; then club hands, club feet, and double hands. Thus he takes in fairly well the range of possibilities. But then he leaves the possible and goes to the changeling and describes and illustrates instances of infants with claw hands and feet; eyes in the abdomen and extremities; animal heads

protruding from the joints; infants with animal heads (even one with an elephant head), and finally as a climax, an infant with a horn, wings and the sign of the cross surmounted with the Greek letter upsilon on its breast. (See illustration.) There were also other abnormalities but the interesting point is, that to each he gives an interpretation on a religious basis. Was his desire to bring this material forward the reason for his writing the book?



The Surgery of John de Vigo

A RETROSPECT of the history of surgery shows that the pendulum of domination swings slowly back and forth over the world resting for a moment over one country and then swinging to another. Thus in the middle ages as the greatness of the Salernitan school waned the palm in surgery passed to France and the great men of the Schools of Paris and Montpellier, and the Collège de St. Côme—Henri de Mondeville, Guy de Chauliac and others—occupied the spot light. Italy added its bit by furnishing Lanfrancus of Milan to St. Côme but of its own right, in spite of its great Universities at Padua and Bologna it furnished no great surgeon to the world.

The early years of the fifteenth century saw a change and surgery in Italy again took the upgrade. This Renaissance of the practice of surgery began with Giovanni de Vigo of Rapallo near Genoa. He was born in 1460 and died about 1519, and was the father of the so-called Roman school of surgeons. In medicine he followed the footsteps of his father Batissta di Rapallo who is said to have been the inventor of the "apparatus major," a method used in lithotomy. Batissta did not instruct his son in

CThe most excel-
ent workes of Chirurgery, made and set forth
by maister John Vigo, head Chirurgien of
oure tyme in Italy, traunslated into En-
gylshe. Wherunto is added an exposi-
tion of straunge termes and vn-
knownen symples, belon-
gyng unto the
arte.

CImprynted by Edwardre Whyt-
church, wþth the Kynges molte
graciousse priuelege for
seuen yeres.

*Cum privilegio ad imprimendam
solum.*

Anno. D. 1559.

TITLE PAGE OF TRAHERON'S ENGLISH TRANSLATION OF JOHN DE VIGO'S SURGERY

this method but, instead, communicated it to Giovanni de Romanis of Cremona. Ultimately it came to Mariano Santo di Barletta (1489-about 1550) and was published by him in 1534. It was learned by Ottaviana da Villa, an itinerant surgeon who practiced lithotomy and by him taught to Colot through whom it reached France.

The name borne by de Vigo came to him in an amusing way. His family was evidently an important one, through its connections at least, for throughout his life de Vigo was constantly under the protection of high political and ecclesiastical influences. One of these patrons of the family, Ludovico de Saluzzo, Count of St. Mark, took a great fancy to the infant John and he, in his endeavor to pronounce the name Ludovico, shortened it to Vico or Vigo and the childish nickname was fastened to him for life. Another of his patrons was the Cardinal Giuliano della Rovere who, when he became pope and took the title Julius II, called de Vigo to Rome where he spent the greater part of his remaining years.

Being the son of a physician, John de Vigo took up the same line and became a great student of the former masters, but did not progress very far beyond them as his book is filled with references to Hippocrates, Galen, Avicenna and so on and is practically a compilation of their work. He seems to have been a well read man and a hard student but not much of an independent thinker.

The Italian surgeons of the time had a somewhat inflated idea of their dignity and believed that working with their hands put them on a lower social plane. So de Vigo believed that operations were much beneath the dignity of a learned man and should be referred to the itinerant physicians. This may be one of the reasons why his father's lithotomy was not transmitted

through him. De Vigo did, however, introduce the crown trepan and for haemorrhage used the form of ligation described by the older masters in which the vessel was transfixed by a needle and tied under it as in the hare-lip suture.

His book entitled "Practica in arte chirurgica copiosa nuper edita a Joanne de Vigo" appeared first in Rome in 1514. It was translated into English by Bartholomew Traheron and dedicated by him to Rycharde Tracie. It bears as its title (as shown in the illustration):

"The Most Excellent Workes of Chirurgery, made and set forth by maister John Vigon, head Chirurgien of our tyme in Italy, translated into Englishe. Whereunto is added an exposition of straunge termes and unknown symples, belongynge unto the arte." It was printed by Edwarde Whytchurch in 1550. Neither Tracie nor Traheron were physicians but both were students of early scripture and higher learning of all kinds. Tracie had taken care of Traheron who was left an orphan at an early age and educated him both in England and abroad and the translation of de Vigo's work was an evidence of appreciation of this kindness by Traheron, and rather an exhibition of his ability at translating than a desire to render any great service to medicine. Traheron's opinion of medicine was not very high and he did not particularly approve of it but believed that most diseases were the punishment of sins! He begins his dedication by saying "God the myghtie governor of all thynges, long tyme sythens, hath witnessed, by his excellent prophet Moses, yt for the transgression of his holy lawes, he wolde plage the people wt sondrye, & grevouse disease. Howbeit our blindenes hath ben so great, yt in the multitude of most fylthy, and shamefull botches, sores, & other pitious maladies we have not perceaved, how horrible a thynge synne is, & how present vengeance(n)ce

the dyspisynge, and neglecting of goddes dredfull co(m)au(n)-deme(n)tes, bryngeth upon us, no not when we have be burnte wyth fyery carbuncles, nor when oure fleshe hath bene toren from the bones, & eaten up wythe lothsome cankers, nor whe(n) we have ben myserably torme(n)ted, wyth yt moste fylthy, pestiferous, & abominable dysease the frenche or spansysh pockes." Later, in order to justify himself, he says that for the purpose of helping mankind God gave "Vertues to herbes, stones, trees, and metalles, where wyth our evels myghte be eased, & also styrring up me(n) to note suche thynges, and to practyse them upo(n) our paynfull grieves." The introduction is so heartfelt that one is led to wonder if some ailment of his own did not lead Traheron to study and translate de Vigo's work and to pick this author out as he was not an operator but preferred treatment by salves and ointments at which he was a master.

De Vigo's work as a whole follows the usual form of the surgeries of the time. First, after an index, he gives a short résumé of the Galenic anatomy. He then diverges a little and discusses inflammations of various types and adds a chapter on syphilis before taking up fractures and dislocations to which he devotes only a short space. The remainder of the work contains an antidotary; a discussion of various medical conditions (among which is a rather full discussion of Tertian fever) and closes with a chapter of definitions of "straunge" words which are really medical terms.

His name still remains in our modern pharmacopeia, attached to Emplastrum de Vigo or mercurial plaster of which he was originator.

Daserst Buch / der grossen
Das Achtet Capitel / Vom brand des puluers /
von pūchsen des salinters / des schwefels / des aquaforts / oder
schaidwassers / oder ander derglychen
Alchimistisch zufall.



Iser brand ist ein eiterringender brand / der in s'm selbs ein grosse merck
liche hitz fahrt / vnd hart / vñ nic bald / sonder langsam erkaleet / vñ wa
er anhaft da klepte er stark an / dan der schwbel vnd nieer lassen nie
nach / bis sie gar verzert sind / außgenommen der brand vom himel / sonst ist kein
hitz vber dise hitz vñ brand / also auch die starken wasser / so von Alchimistē ge
macht werden / Die selbigen sind auch in der grösste böhheit / nit allein der hyg
balben / sonder auch der grossen Corrosifischen art / so sie mit einsürē / als dan
verheilung zu
vergan.

inn

FIRING A CANNON HEADING THE CHAPTER ON BURNS IN THE GREAT SURGERY
OF PARACELSIUS



The Great Wound Surgery of Paracelsus

OCCASIONALLY an individual by his very personality achieves a remarkable prominence in his chosen field. This was true of Paracelsus who was probably the most picturesque medical figure of the sixteenth century and who, though his own reasoning and ideas were equally as erroneous as those of his predecessors, nevertheless overthrew the domination of Galenic medicine and brought surgery, at least, back to a more rational basis.

Phillipus Theophrastus Aureolus Paracelsus Bombastus von Hohenheim, to give him his own and assumed names, proved the stormy petrel of medicine in central Europe of the sixteenth century. The son of a physician, William Bombastus von Hohenheim, he was born in Switzerland about 1493 and received his instruction first from his father, then from Eberhard Paumgartner and Matthaeus Scheyt and finally at the age of sixteen entered the University of Basel. When and if he graduated is not known, but after leaving the University he began to travel and covered much of Europe, at times visiting the hospitals and at times serving as war surgeon in the Netherlands, Denmark, and

Italy. He also visited Spain and the Orient. During this time he was constantly absorbing the then current surgical practice and forming his own opinions which he was later to express most forcibly. He apparently read little, though in his work he refers to some of the older writers and evidently knew their ideas. One of his dicta was: "Reading never made a doctor but practice is what forms the physician. For all reading is foot-stool to practice, and a mere feather broom."

In 1526 he returned to Germany and a year later became city physician in Basel and also professor of medicine and surgery at the University. Realizing, as others had in England and France, that many students did not understand Latin and Greek, he overthrew tradition, and gave his instruction in the vernacular. Apparently his name of Bombastus fitted him perfectly for his utterances and writings are of the most egotistical and bombastic character. To show his utter contempt for the earlier writers, particularly of Galen and the Arabian school, he burned the works of Galen and Avicenna in his class room. He had, however, great respect for the works of Hippocrates and considered him the greatest physician of Greece, naïvely adding, just as he, Paracelsus, was the greatest physician of Germany. He held the positions at Basel only two years and then was again on the wing; first in Alsace, then in 1529 in Esslingen and Nuremberg, always practising, constantly writing, for he had published two medical treatises, and if history is to be believed, always drinking, for he has the reputation of having been a most accomplished drunkard.

In 1531 he returned to Switzerland where he spent some years at St. Gall, Zurich, and other towns and then in 1536 at Ulm he published his Great Surgery which he dedicated to King Ferdinand, the dedication being dated at Münchenraht. He was not

satisfied with this edition, for in the same year another was printed in Augsburg by Heinrich Steyner, which Paracelsus saw through the press himself, and this was his only surgical work. It was entitled "Der grossen Wundartzney" (The Great Wound Surgery), divided into three books: the first book treating of wounds of all types, including gunshot wounds, snake and animal bites, and fractures. The second and third books dealing with open ulcers and in this portion of the work Paracelsus makes his principal reference to operative surgery and advises excision of varicose veins to heal chronic ulcer of the leg. After the publication of his work he again took up his wanderings, apparently became little more than a drunken tramp and finally died in 1541 at the age of 48 years.

The first impression is that there is little in Paracelsus' surgery and looked at from one angle this is true, so it seems hard to explain the man's great vogue. On further study, however, the reason seems fairly clear, especially when one compares his methods with the cause of the great success of Paré. It was the usual practice of the early sixteenth century to irritate wounds with constant dressings and continual application of caustics, one of the favorites being boiling oil to promote suppuration. Paracelsus, attacking surgery *de novo*, cast all precedent to the winds, and announced the dictum that there was in the tissues themselves a healing balsam, which he called animal mummy and which was aided by cleanliness of the wound and some soothing chemical applications but not by irritating caustics and boiling oil. This policy of letting wounds alone must have greatly increased his good results over those of the surgeons of his day and seems to be at least a plausible reason for his great success. In addition Paracelsus, though possibly not regularly graduated in medicine, was well grounded in chemistry and

believed that chemicals should be used as medicines. Hence many of his wound dressings were antiseptic and these, added to his constant insistence on cleanliness, aided his results.

Paracelsus made this "laissez faire" attitude in wound treatment a little more spectacular by adding a touch of the supernatural and mystic to it. In order to aid the action of the wound mummy he advocated the practice of the "weapon salve" in which the dressings of different ointments, etc., were applied to the agent which had caused the wound and the wound itself was dressed with a simple non-irritating dressing. This bit of Paracelsian charlatanism held credence for many years and kept bobbing its head up at intervals for centuries. He was constantly at variance with the then prevailing ideas and, especially in medicine rather than surgery, was from time to time advocating some new outlandish idea, obtained as a rule from alchemy, with which he stirred up the medical world. His influence lasted into the seventeenth century when an effort was made to resuscitate his doctrines by a group known as the Paracelsists but when they failed to dominate medical thought and gave way to the Iatro chemical and Iatro mechanical schools Paracelsus ceased to exist in the rôle of a guiding spirit in medicine and surgery.

The illustrations in the great wound surgery are mostly borrowed from the *Surgery* of Hieronymus Brunschwig, Strassburg, 1497, but the one shown originated with Paracelsus and is one of the first, if not the first, illustration of firing a cannon.



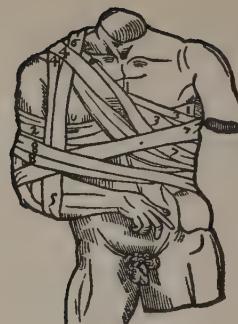
The Surgery of Guido Guidi

THOUGH Jerome of Brunschwigk and Hans von Gerssdorff in Germany had made many advances in surgery and published their methods and results, the knowledge was slow to spread, and still more slow to be accepted by the medical men of the time. In Italy surgery during the early part of the sixteenth century was still being practiced according to the Hippocratic and Galenic methods which had been handed down by imperfect and incomplete manuscripts on the one hand, and from generation to generation by personal teaching on the other. Berengarius of Carpi had made a few advances similar to those of the German surgeons and had published his belief that gunshot wounds were neither burned nor poisoned in which he followed the great Italian army surgeon Bartolomeo Maggi of Bologna. This same view was put forward at approximately the same time by Paré in France.

Vidus Vidius, more commonly known as Guido Guidi, was a Florentine surgeon of some note and of a very engaging personality, if we are to believe his great friend Buonaventura Cellini. Through Guidi's friendship with his patron Cardinal Rodolfo



LXXVI



LXXVII



CXXV.

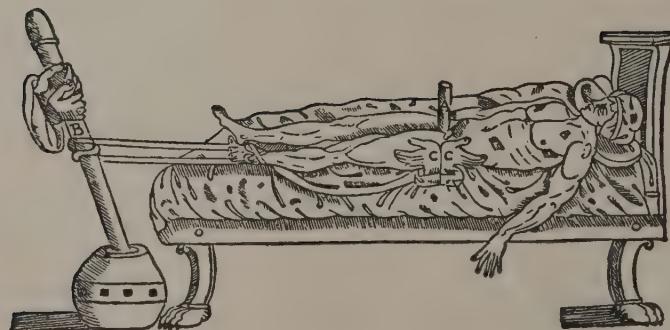


CXXVI.

A *Lignum rotundum ac leue.*

B *Extensio à pedibus.*

C *Repellens clunem à latere.*



Idem quoque

ILLUSTRATIONS FROM THE SURGERY OF GUIDO GUIDI, ADAPTED
FROM ORIBASIU^S

he obtained access to a newly found Greek manuscript which the Cardinal had discovered. The manuscript contained in the most complete form up to that time the commentaries of Galen upon the surgical works of Hippocrates.

About this time the French King Francois I recognized the necessity of improving the surgery in his country, his attention being called to this necessity by the terrible morality among his soldiers. As wars were almost continuous this constituted quite a drain upon the productive men of his kingdom. Francois thereupon set about to find a surgeon who could establish and organize a course in surgery in Paris. The most prominent candidate in France for this position was Jean Tagault. Guido Guidi, however, carefully compared Cardinal Rodolpho's manuscript with those in Rome and translated it from the Greek into Latin. At the same time he added comments of his own upon those parts of Hippocrates' work which were not already covered by Galen. The king of France because of his work appointed Guidi Premier Medecin du Roi and lecturer on surgery in the Collège de France. The original manuscript was presented to the King by Cardinal Rodolpho, and Guidi went to Paris to take up his position and apparently to supervise the printing of the book for Buenvenuto Cellini writes in his memoirs: "I should, however, first take notice of my having acquired the friendship of one of the most learned and most amiable acquaintances that I ever had in my life. This was Signor Guido Guidi, an excellent physician and eminent citizen of Florence. . . . Signor Guido Guidi came to Paris while I resided in that capital . . . I conducted him to my castle . . . there were many habitations in it, occupied by several men of different trades, amongst whom there was an excellent printer . . . and it was he that first printed the excellent medical treatise

published by Signor Guido." This refers evidently to Petrus Galterius who printed Guidi's work in Paris and brought it out in 1543. The book is entitled "Chirurgia e Graeco in Latinum conversa, Vido Vidio Florentino interprete, cum nonnullis eiusdem Vidii co(m)mentarius." As was to be expected it was dedicated to Francois I, king of France, and published with his consent as well as that of the Pope and the Duke of Ferrari in May, 1543.

The work is confined to surgery and is practically a compilation of the knowledge of the then known treatment of wounds, fractures, and particularly those conditions due to war wounds. The authors discussed are Hippocrates, Galen, and Oribasius. On the portions of Hippocrates' work dealing with ulcers, fistulæ, and wounds of the head, there were apparently no comments by Galen, and Guidi gives his own views upon the conclusions of Hippocrates. Galen's commentaries on three of Hippocrates' books are then translated, namely: Fractures, Joints, and the Function of Medicine, the latter being more or less philosophical. Galen's own work on bandaging is then republished and finally Oribasius' work on knots and machines is shown. The directions for treatment are detailed and simple and the various instruments, bandages, and machines are beautifully illustrated by Francis Follat, a French engraver who also lived in the same castle as Cellini and Guidi.

Guidi remained in Paris holding his position at the University until the death of the King in 1547. He was then called back to Italy by Cosimo I, the ruler of Tuscany, and made his personal physician and professor at Pisa, at first of the chair of Philosophy and later that of Medicine. Cellini also refers to him as chief magistrate of Pisa.

Much of Guido's work was published posthumously, edited by his nephew Vidus Vidius, the younger, and has been added

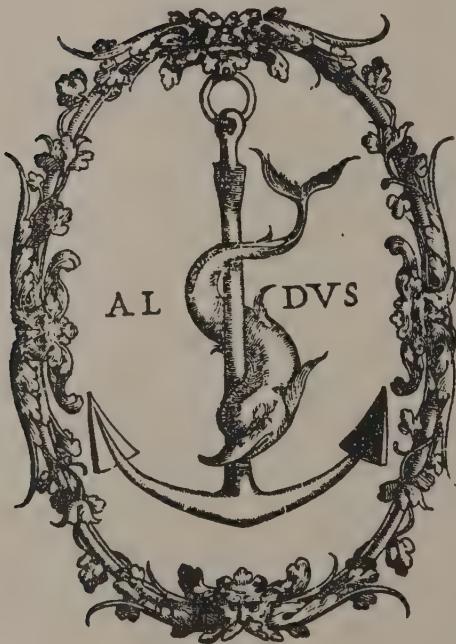
to and amended so much that it can hardly be considered a true indication of his knowledge and his reputation must rest on the translation of the manuscript of the Greek surgery through which he served to revivify the basic surgery of the ancient authors in France and pave the way for the great improvement in French surgery which was to be made by Paré and his followers.

He died at Pisa in 1659 and his name has come down to us not only in surgery but also in anatomy through its connection with the Vidian nerve and canal.

MEDICI ANTIQVI OMNES, QVILATINIS LI-

TERIS DIVERSORVM MORBORVM
genera & remedia persecuti sunt, undique con-
quisiti, & uno uolumine comprehensi,
ut eorum, qui se medicinæ studio de-
diderunt, commodo consulatur.

Index in omnes plenissimus.



VENETIIS, M. D. XLVII.

TITLE PAGE OF THE ALDINE ANCIENT MEDICINE



The Aldine Edition of the Collected Works of the Ancient Medical Writers

PROGRESS denotes change and likewise dispute between radicals and conservatives. The pendulum swings first too far one way on the side of radicalism and then too far the other on the side of conservatism. Between the ends of its swing the golden mean is found and by gradual change and understanding of this point advance is made. This was just as true in sixteenth century medicine as at any other time in the history of the world. On the side of the radicals and their ideas of advance were Paré in France, Tagliococci in Italy; the Englishmen Clowes, Gale, and Banister; the Scotchman Lowe and, above all where radicalism is concerned, the great Paracelsus Bombastus von Hohenheim. These men were some of them educated and knew the classics. Others, however, were not, but all of them wrote in the vernacular realizing the importance of transmitting knowledge to students who were not able to read and study the ancient Greek and Latin.

In the other camp were certain members of the surgeons of the long robe who represented the reactionaries and were standpatters to the last ditch. An outstanding example of this

type was Paré's lifelong enemy Gourmelen. To these men any advances beyond, or contraversion of, the dicta of the ancients was little less than sacrilege. To them the Vesalian anatomy was absolutely unbelievable and any surgical change ridiculous and not even to be considered. Though we can easily see how absolutely erroneous the stand of the reactionaries was we must still be thankful to them as it was the means of furnishing us a very beautiful book, for such a condition of affairs would naturally not be overlooked by the typographers and they would see to it that the desires of the conservatives were gratified by reprinting the works of the ancient writers.

One of the foremost printing establishments of the time was the Aldine press at Venice whose printer's mark of the dolphin twined about an anchor stands for good typography and is probably one of the best known, as well as beautiful, printer's marks in the world. Aside from being good printers the men of the family were well educated savants who did much of their own editing and even writing and translating. The elder Aldus Manutius (Teobaldo Manucci) founded the press in 1490 and began the publication of the Greek classics for which he designed the italic type which goes by his name and which was supposed to have been adapted from the handwriting of Petrarch. The elder Aldus' son, Paulus Manutius, succeeded his father after an interregnum during which the Asolini, composed of Aldus' father-in-law and his two sons, carried on the press and, being men of somewhat short-sighted policy, ran down the quality of the product.

Paulus determined to restore the pre-eminence of the press and devoted himself to publication of the Latin classics. During his connection with it, as manager, the product improved. Evidently seeking the opportunity for successful reprinting of the

works of the old medical writers, for the Aldine books were not expensive and were printed in large editions and so had to command a ready sale; the press published in 1547 a compendium of medicine consisting of a collection of the works of the early authors written in Latin which was entitled "All ancient medical men who described, in the Latin tongue, varieties of and remedies for various diseases have been collected from all sources and included in one volume, in order that it may be consulted easily by all those who have devoted themselves to the study of medicine."

The array of authors whose works were published includes many of those whose names have been handed down as the leaders of their periods. The diversity of subjects is chosen to cover the various departments of medicine. The first author is, as is fitting, the great Roman writer on medical subjects, *Aurelius Cornelius Celsus* (between 25-30 B.C. and A.D. 45-50) who, though not a physician by profession, contributed much to medical art, especially in descriptive and operative surgery. His eight books were printed in full. The work of *Quintus Sorenus*, written in the Latin hexameter which Tennyson calls "The stateliest measure ever moulded by the lips of man," follows. The *Treatise of Trotula*, presumed to be a female physician of the school of Salerno during the 11th century, which is devoted to the care of the pregnant woman before, after, and during labor is given place after that of Quintus. Then come in turn the writings of *Marcellus* (345-395); *Scribonius Largus* (A.D. 45); *Soranus of Ephesus* (A.D. 98—); *Caius Plinius Secundus* with his five books "Concerning Medical Matters"; *L. Apuleus of Madaura*; "Concerning the Virtues of Plants"; *Antonius Musa*; *Aemilius Macer* (15 B.C.), "Concerning Plants"; *Strabus Gallus*, whose *herbal* is written in hexameter; *Caelius Aurelianus* of

Sicca in Numidia (about A.D. 400) whose ideas on diseases of the mind were far advanced for his time; and finally Theodorus Pricianus (about A.D. 380) whose medical work is dedicated to his brother Timothy, also a physician.

The contributions are well selected to give a general review of all departments of medicine and that much time and thought were given to the selection is shown by the fact that the introduction to the work of Marcellus is dated 1535, seven years before the publication of the completed work.

Bearing out the presumption that the work was published for the conservatives is a paragraph in the prefatory note addressed to students of medicine which, translated, reads "We do not touch upon the writings of more recent men, because it would be unending and foolish especially since nothing seems to have been overlooked by the ancients whom we have copied."

The publication of collections of the older writers was common during the early days of printing. Nearly every one of the important presses produced one or more such works which was edited either by some member of the staff of the press or some physician or surgeon who was known as a compiler or translator. These volumes are still fairly common and there is no better method of stimulating in oneself an interest in old medicine and surgery than getting one of these collections and actually reading the contents in order to obtain the ideas of these old authors at first hand.



The Surgery of Jean Tagault

IT IS natural and to be expected at the inception of a science and scientific teaching, in which category surgery during the sixteenth century may properly be classified, that the practitioners and students of that science would fall into two classes. The first, those in actual practice, the field workers so to speak, who would act as the pioneers of new thought and method and do much toward furthering the budding art of surgery. To this class belonged such men as Paré, Tagliacocci and Clowes—men for the most part of a lesser education than others but intensely interested in the practical side of their work. The second group consisted of men who were well educated and who were interested more in fostering and teaching surgery than in its actual practice. To them, naturally, the works of the older authors appealed and one of their aims was to place this work in an assimilable form before their students, who belonged to the educated class. These men had little use for men of the clinical and practical type, most of whom had sprung from the rank and file of the lower classes and were essentially not educated men. Consequently their works were written in Latin rather

IOANNIS TAGAVL

TII AMBIANI VIMACI, PARISIEN
SIS MEDICI, DE CHIRVRGICA
institutione libri quinque.

His accessit sextus liber de materia chirurgica, authore
Iacobo Hollerio Stempano, medico Parisiensi.



P A R I S I I S.

Apud Christianum wechelum, sub scuto Basiliensi,
in vico Iacobzo: & sub Pegaso, in vico
Bellouacensi. M. D. XLIL

Cum Priuilegio.

TITLE PAGE OF TAGAULT'S SURGERY

than in the vernacular. This to them appeared to be a method of keeping surgery on a high plane. These two classes of surgeons both considered themselves true scientists and rightly so, but were constantly endeavoring each to belittle the other. Consequently this period shows a sort of three-fold enmity; for the practical class was constantly endeavoring by word and deed to get after the itinerant surgeon who was in the majority of cases an out and out quack, while he himself was under fire from the savants. So he, who was really doing the greatest work for his science, found himself, as it were, between the upper and the nether millstones.

Jean Tagault of Vimeu, of Belgian Gaul (*Joannes Tagaultius Ambiani Vimaci*) belonged to the class of the savants and highly educated men. Born in Vimeu in Picardy, he studied in Paris and in 1523 or 24 was awarded the degree of Doctor Regent by the Paris faculty. After some time spent in the study of surgery he became dean of the faculty and served in that capacity from 1534-37. He died in 1545. As would be expected from his training there is little new in his work so far as advance in practical surgery is concerned. He did, however adapt what was good in the works of the ancient and medieval surgeons and classify it in a clear and concise manner for the use of those students who understood Latin. He had a great admiration for Guy de Chauliac and his surgery served as the basis for Tagault's work, though many other authors are mentioned. Tagault freely admits this in his preface to the reader in which he states that as Guy de Chauliac borrowed from Hippocrates and Galen, so he borrows from Guy, and his endeavor is to clear up the obscure points in Guy's work as it was Guy's to elucidate that of his predecessors.

The work was published in 1543 in Paris by Christian Wechel, a bookseller, and consists of the "Five Books of the Institutions

of Surgery by Jean Tagault" to which is added a sixth book containing the "Materials of Surgery" written by Jacob Hollerius, a physician of Paris. There is the usual dedicatory epistle, which in this case is written to King Francis I. This dedication brings to mind the thought that the work was probably written for the purpose of obtaining the chair of surgery at the University of Paris for which the King was then seeking an appointee, and for which the most likely candidate in France was Tagault. The King, however, went out of France to Italy and appointed Vidus Vidius of Florence to the chair, evidently considering his translation and amendment of the Galenic manuscript better than the surgery of Tagault. Possibly the acquisition of the original manuscript which was the property of Cardinal Rapallo and was to be presented to the King if Vidius were appointed, had something to do with the decision but even if that were the case an impartial judgment of the two books leads one to agree with the King's choice. It is interesting to note that in the sixteenth century the chair of surgery was, as it were, awarded on the basis of a competitive essay.

The dedication is followed by the preface to the reader and a most carefully compiled index which occupies seventeen pages and bears witness to Tagault's painstaking work. Then comes a Compendium of Surgery, twelve pages long, which treats of the objects and aims of surgery expressed in the form of short paragraphs, some of which are arranged in question and answer form. The student who reads this would have sufficient knowledge of what he was to study to go on to the body of the work which was called the five books of surgery. These follow the general divisions of the surgeries of the ancients and are entitled: Book one, tumors contrary to nature which include the various inflammatory swellings as well as true tumors and also

treats of hernia, in which classification varicocele is placed. Book two takes up wounds and their treatment. Book three treats of ulcers and their cure. Book four, the reduction and cure of fractures. Book five, the recognition and replacement of dislocations. The sixth book by Hollerius describes the various medicaments used in surgery.

Save for three views of the human skeleton the work is without illustration and one naturally experiences a feeling of pity for the student who had to assimilate the greatly condensed technical detail served up to him without the aid of visual impression. The work represents a distinct advance as a textbook and served in this capacity for many years. Ancient terms are clearly explained and synonyms are always carefully correlated so the student could recognize the terms in all languages. Later authors constantly refer to Tagault and his dicta as authoritative and this work lifted him to the pinnacle of his success. One is amazed at the amount of research that must have been done to produce the work.

The full title of Tagault's surgery reads—"The five books of Joannus Tagaultus Ambiani Vimaci, physician of Paris, concerning the institutions of surgery. To this is added a sixth book concerning the materials of surgery, written by Jacobus Hollerius Stempanus, physician of Paris. At Paris, at the shop of Christianus Wechelus, under the shield of Basle in the street called Jacobaeus: and under Pegasus, in the street of the Belgii, 1543 with privilege."

ANDREAE
VESSALII BRVXELLENsis,
PHILIPPI HISPANIARVM
REGIS, MEDICI,
CHIRURGIA MAGNA
in septem libros digesta:

In qua nibil desiderari potest, quod ad perfectam,
atque integrum de curandis humani corporis
maius, metabolum pertinet.

Ab Eccellen Philologo, ac Medico Regio, PROSPERO
BORGARVIO, recognita, emendata.
ac in lucem edita.

Forma animi instruens, quoniam Chirurgi volunt, his in libro
apparet, defigunt ferae.

Cum amplissimum Iudicium cum capitulo: tunc rerum
omnium memorabilium.

GVM PRIVILEGIQ.



VENETIIS, Ex officina Valgrisiana.
M D LXIX.

Ex Bibliotheca Windhagyana.

Andrea

(A)

(B)

Corpus mulus modis vulneratum.



Quomodo

(C)

Quomodo plumbeus globus immisus extrahatur.



Brachia

(D)

A. TITLE PAGE. B. ARROW WOUNDS. C. THE "WOUND MAN." AFTER GERSSDORFF
D. BULLET EXTRACTION. AFTER BRUNSWIG



The Seven Books of Surgery of Vesalius

FROM its inception until the present, surgery has been inseparably connected with anatomy. The men that we think of as great anatomists were also great surgeons and vice versa. Anatomy was looked upon as the basis of surgical knowledge. The individual man might excel in one or the other and his name thus become connected with surgery or anatomy almost to the exclusion of the other, but closer examination of his record will disclose that he was skilled in both subjects. This was particularly true of Vesalius. He was so pre-eminent in anatomy that the fact of his being also a practising surgeon and one of the greatest of his time is almost lost sight of. His surgery, however, has been preserved for us by one of his students. During his residence in Madrid as physician to King Philip of Spain he was apparently active in the practice of surgery. Unlike the majority of the physicians of that time, he did his surgery himself. As he had worked in anatomy, doing his dissections himself, and learning from first hand information, so he did his surgery. He had raised anatomy to a high plane. For surgery, during his residence in Spain, he did the same thing and

was quite instrumental in initiating at least, the fall of the barber surgeon.

The writings of Vesalius himself, however, are practically all in the field of anatomy. One of his students and probably an assistant, Prospero Borgarutius, feeling keenly that the surgical teachings of Vesalius should not be lost, undertook to preserve them in a book which was published in 1569 by Valgrisius. The book follows the stereotyped form of the surgeries of the time. Written in Latin, the language of medicine, it is divided into seven books as stated in the title. Book one treats of luxations and their replacement; book two, fractures and their treatment; book three, wounds; book four, the treatment of ulcer; book five, the subject of tumors; book six is an antidotal; and book seven considers surgical medicaments.

It is interesting to note that anatomy is not included; but Vesalius had personally written so much and had so successfully contradicted the then current Galenic anatomy that it is fair to assume the author considered a chapter on anatomy unnecessary.

One of the most interesting portions of the work is the introduction, part of which tells the story of the publication. Borgarutius says: "Because of this factor it happened that after Hippocrates, Galen, Avicenna, Celsus, and many others of the same type, Andreas Vesalius of Brussels, at one time physician to the king, and a Caesarine, had shown many (new?) things. Some of these are known. Others, because of his untimely death, would be therefore buried, unless they should be published by the industry of someone, especially one of the number that had the greatest opportunity of study with him. Since I, especially, am of this number and since I understand that he was the personification of a kindly heart (and if anyone loves such a one let him desire his immortality) and as I have realized how much I

have been forwarded by the great name of Vesalius whom I have always obeyed as if there were the power of God in this human; therefore, I have always avowed this by the immortal gods, that should the opportunity at any time offer itself to me by which I might show the incredible benevolence of that great man, I would follow him by that opportunity most diligently." He then goes on to say that later when Valgrisius suggested the publication of a surgery of Vesalius he grasped the opportunity to pay this great debt and the work as published is the result. This book differs from the majority of those of the time in being but sparsely illustrated. The Vesalius skeletons are shown in connection with fractures and dislocations. The chapter on wounds is illustrated by a reproduction of Brunschwig's bullet extraction and a modification of Gerssdorff's adaptation of the zodiac figure to show various wounds. A few instruments are shown.

Vesalius' correlation of anatomy with clinical surgery and the fact that during his training as an army surgeon he did the work himself are his greatest contributions to surgery; excepting perhaps, his description and diagnosis of abdominal aneurism (1555), even though he believed the arteries carried vital fluid and veins were the only blood circulation organs; and his successful operation for empyema on Don Carlos of Aragon in 1562. In the chapter on tumors he includes abscess, carbuncle, and inflammatory swellings, but differentiates between hidden and surface scirrhus, and in carcinoma advises excision especially in the breast.

So much has been written of Vesalius' life that it is not necessary to repeat it here except possibly to call attention to the fact that he took his name from the town of Wesel where his family came from originally. His proper family name was Witing and

there were four generations of physicians. The father of Vesalius changed the usual custom and called himself Andreas of Wesalia instead of Witing of Wesalia. The son, Andreas, dropped the "of" and altered the town name so that he became known as Andreas Vesalius and the family name of Witing was dropped entirely.

It is surprising that one man could accomplish so much in a comparatively short lifetime for Vesalius was born in 1514, became professor of Anatomy and Surgery at Padua in 1537 at the age of twenty-three years and began to publish in the same year. He was called from position to position, always dissecting and publishing his results and finally at the age of fifty died in a shipwreck. Though able to lead his students, Vesalius fared differently with his teachers for his questioning of and disbelief in the Galenic Anatomy cost him the friendship of both Jacobus Sylvius and Guinter of Andernach, though he apparently remained on friendly terms with Jean Femel and Jean Tagault.

Though "The Seven Books of Surgery" is the only written record left us of the clinical attainments of Vesalius, it is fair to assume that he had a great influence on the surgery of the time, especially as he was able to instill such loyalty in his students and associates. His teaching was sound and his methods logical for the knowledge of the time.

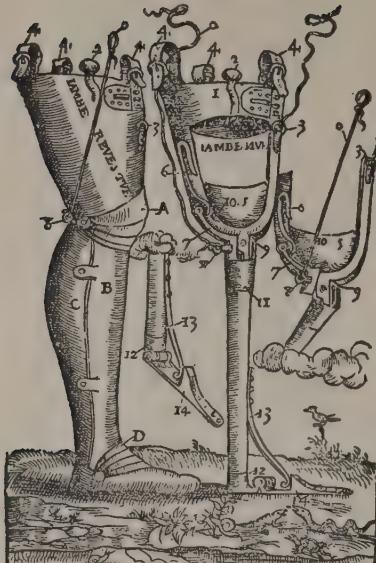


The Ten Books of Surgery of Ambroise Paré

THE name of Ambroise Paré brings to the mind of the surgeon a vision of the enormous amount that can be accomplished in one life time. It seems that looking backward, modern surgery began in Paré; yet he, himself, discovered nothing new, but the adaptation and application of previously known and almost forgotten surgical procedures made him the greatest surgeon of his time.

Paré was an anatomically trained surgeon, and naturally looked at surgical matters from that viewpoint. His first publication of importance was in 1545, when he called attention to the necessity of placing the patient in the same position in which he was when wounded in order to extract a buried projectile. This technique had been advised centuries before by Paulus of Aegina and had been forgotten. It was doubtful if Paré knew of it for in these early years he apparently could read Latin only a little if at all. Whether it was an original thought in Paré's mind or not he employed the technique and succeeded in removing a bullet from the shoulder of Monsieur de Bris-sac after many futile attempts had been made by others, and

Des gangr. & mortifié.



(A)

Instrument



(B)

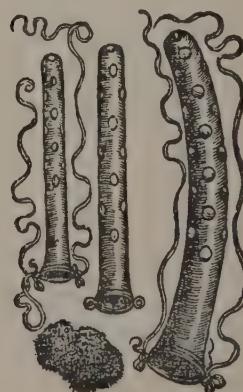
De Chirurgie.



(C)

Des playes de hachebuttes

causent douleur ausdiées playes , & leur renouellent autres mauvais accidents. Pourtant l'approue les tentes d'aunfrage, on elles auront lieu , & en grande quantité de sanis des canulees faictes d'or , d'argent ou de plomb, comme sont cestes-cy.



Aus si fault-il appliquer des compresses à
l'endroit du fond du sinus , afin de comprimer les

(D)

A. ARTIFICIAL LEGS. B. REDUCTION OF A DISLOCATED SHOULDER. C. A TRUSS FOR INGUINAL HERNIA. D. "TENTS" SIMILAR TO MODERN DRAINAGE TUBES

considered it worthy of publication. In 1552 this book on wounds made by arquebusses was republished.

The prevailing method employed for the control of hemorrhage at this time was the use of heat applied in the form either of the actual cautery or more usually of boiling oil. This method was used by Paré in his early days as a war surgeon but at one time he found himself without a supply of the oil and so had to use a simpler and less caustic dressing. He says that after doing this he could not sleep and in the morning visited the wounded in fear and trembling but noted with great joy that the patients so treated had done better than those on whom the boiling oil had been used. This experience changed his method of treating wounds though he was unable to get away from the hope for a specific dressing, one of those he used being puppy dog fat; and he turned his attention to the treatment of operative wounds, the principal one being that of the amputation stump. After a study of previous authors whom he cites, in 1552 he amputated a leg and used the ligature instead of the hot iron and boiling oil to check the hemorrhage. He then used the method continuously and in 1564 published it for the first time in his "Dix Livres de la Chirurgie" (Ten Books of Surgery). The condemnation of the cautery and of boiling oil and the advocacy of the ligature in their stead aroused a storm of protest which culminated in the appearance of a book instigated by Etienne Gourmelen but, because of Gourmelen's cowardice, published in 1580 by one of his students who was used as a catspaw.

Five years later Paré answered this criticism in his "Apology" in which he gives reference to the ancient surgeons to show that the method he advocated was not new or revolutionary and throughout with the greatest good humor he refers to his adversary, Gourmelen as "mon petit maître" (my little master).

The "Ten Books of Surgery," his first surgical work of magnitude, deals with traumatic conditions in the first seven books, while, as would be expected from an army surgeon, the last three books deal with genito-urinary diseases.

The treatment of wounds shows great progress over the methods of other writers of the time. Paré advises the extraction of the projectile and of any other foreign bodies present. The instruments required closely resemble the present day forceps so far as the blades are concerned, and he shows many types for different shaped foreign bodies. He then instituted drainage for which he used perforated tubes. The first dressing consisted in an ointment injected into the depths of the wound if it be deep. Boiling oil, which had been the accepted dressing up to that time, he does not advise as he considers it harmful as well as painful. The inefficiency of boiling oil he discovered during his first campaign, when for lack of oil he used a mixture of oil of roses, yolks of eggs and turpentine and found the wounds much cleaner than with the oil treatment. A modification of this mixture he advocates for the second and subsequent dressings when he adds the yolks of eggs and saffron to the ointment.

The succeeding books deal with the treatment of wounds made with arrows, lances, etc., fractures, contusions, burns, bone caries, gangrene, gonorrhœa and burning urination, kidney and bladder stones, and suppression of urine. Above all other things Paré is best known generally for the ligation of vessels after amputation. This he describes in the book on gangrene and the description is clear and concise. He uses a tourniquet and after removal of the limb allows some blood to escape. The vessels are then grasped with a clamp and drawn down and ligated. He particularly warns against including structures other than vessels in the ligature.

Paré was essentially an operating surgeon, a very close observer, and a most careful technician. He had great respect for tissues and constantly warns against roughness of manipulation, not only because it causes pain, but also because it militates against the proper healing of the wound. As an example he particularly states that the ends of the forceps to be used for the extraction of foreign bodies must be perfectly smooth and polished lest they injure the tissues in the depths of the wound.

The prevalence of infection which called forth the frequent employment of the newly revived operation of amputation naturally resulted in a large number of cripples. Paré immediately threw himself into the task of designing prosthetic appliances to restore these unfortunates to part usefulness, at least. The results of his labor, as illustrated in his book, are, considering the engineering and mechanical opportunities of the time, remarkable for the ingenuity displayed.

TRAITE
DES HERNIES

CONTENANT VNE AMPE
declaration de toutes leurs especes, & autres
excellentes parties de la Chirurgie, affauoir de
la PIERRE, des CATARACTES des yeux, &
autres maladies, desquelles comme la cure est
perilleuse, aussi est elle de peu d'hommes bien
exercee: Avec leurs cautes, signes, accidens,
anatomie des parties affectees, & leur entie
re guarison:

Par PIERRE FRANCO de Tur-
riers en Provence, demeurant a
present a Orenge.



ALTON
PAR THIBAVLD PAYAN,
1561.

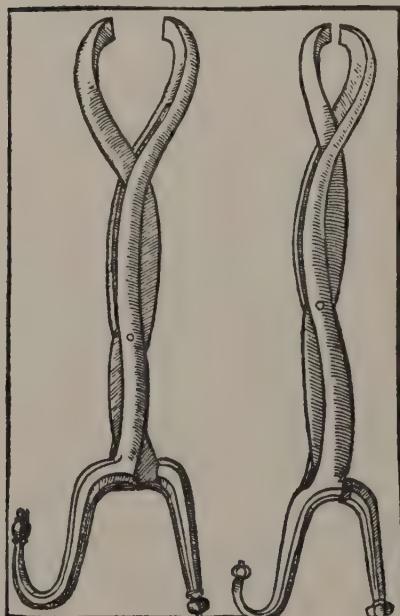
Avec Privileige pour neuf ans.

(A)

DES HERNIES.

157

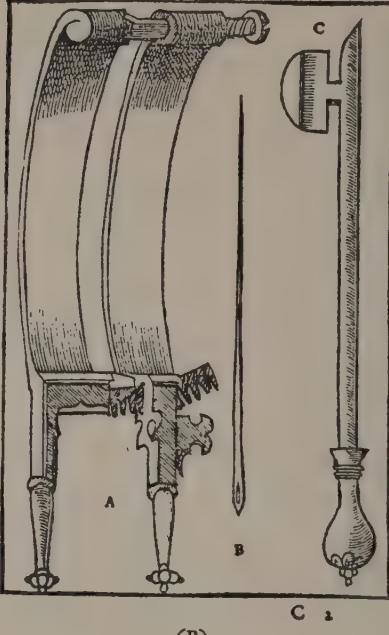
Tenailles incisives.



(C)

DES HERNIES.
A Tenailles aux bernies, B Eguille, C Cautere.

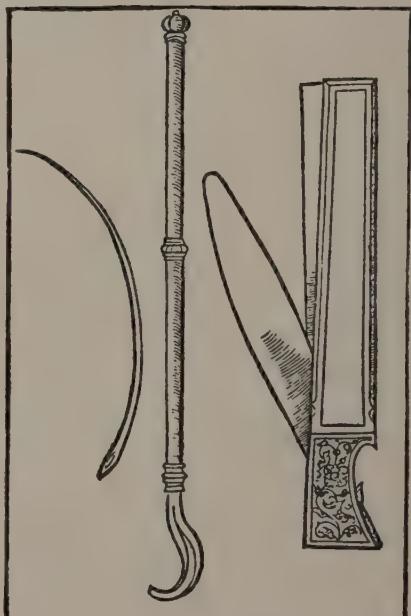
35



(B)

268 TRAITE' TRESAMPLE

Eguelle. Crochet. Lancette.



(D)

A. TITLE PAGE OF FRANCO'S SECOND WORK. B. CRUSHING CLAMP, NEEDLE AND CAUTERY. C. CUTTING CLAMPS. D. CURVED NEEDLE, HOOK AND LANCET



Pierre Franco, The Surgery of Hernia

NO T very much is known of the life of this man, Pierre Franco, who was one of the most original surgeons of the sixteenth century. In his writings he gives a few facts and others have been gathered here and there. He was born in 1500 in the town of Turriers in Provence a little west of the border of Switzerland. Of his early education we know only that he picked up his surgery from the itinerant herniotomists, lithotomists, and operators on cataract. These three operations he practiced throughout his life but brought them to a state of perfection far beyond that of his teachers and though he probably belonged to the class of itinerant surgeons in his early years, eventually, as his knowledge, experience and skill increased he came to despise this class of practitioner.

His first book, "A little Treatise containing one of the principal parts of surgery, which surgeons call hernia," was published in 1556 while he was living and practicing in Switzerland and had been in the service of the government of Berne for 10 years to which the government of Lausanne where he lived was subject. Why he left France for Switzerland is not known,

but as he was a Protestant it is reasonable to infer that it was due to religious difficulties and not from choice, for in 1561 when his second book was published he is found back in southern France again living and practicing in Orange where he remained until his death, the exact date of which is not known.

Franco's second book was a great improvement over his first effort and shows the development which he must have undergone as the result of his own experience and effort. That he studied anatomy is apparent not only from his work but also from the fact that he presented to the cities of Berne, Freiburg, and Lausanne, skeletons which he had mounted himself. He was not, however, a good preparator of anatomical specimens for he articulated the skeleton with catgut instead of wire and Fabri of Hilden calls attention to the fact that the Lausanne skeleton had already fallen apart when he was there in 1586. That he had done considerable reading is shown by his references to the ancient writers and to those of the middle ages and in this alone he had advanced far out of the class of his teachers. In this second publication he includes general surgery though the greatest stress is still laid on herniotomy and lithotomy. It is entitled "Treatise of Hernias containing a full declaration of all their varieties, and other excellent parts of surgery, that is to say the stone, the cataract of the eyes, and other diseases, of which the cure is dangerous and in which there are also few men well trained; with their causes, symptoms, complications, anatomy of the parts affected, and their complete cure."

The volume is written in early French and the style is clear and the wording concise. At times the spelling is a bit difficult but on the whole it is most interesting, especially the portion on hernia. In the anatomy of hernia, Franco pays all his attention to the sac and its contents and misses entirely the influence

of the muscular and aponeurotic walls of the inguinal canal on the formation of the lesion. He believed that in the majority of cases of complete hernia the peritoneum ruptures, while in bubonocele it is only stretched. He distinguishes between bubonocele and scrotal hernia and also recognizes the difference between enterocele and epiplocele. Likewise he shows the difference between incarcerated hernia, in which the contents are adherent to the sac, and strangulated hernia. In the former he gives detailed directions as to the dissection of the contents and in the latter he advises an anatomical operation rather than blind cutting of the ring and opens the neck of the sac from without through a high incision over the external ring. He first describes the usual operation of his time in which the testis and sac are removed en bloc by crushing the neck of the sac and cord and removing all material beyond the crushing clamp after which the stump is cauterized with the actual cautery. He advises the use of this procedure, however, in cases of unilateral hernia.

In bilateral hernia he advises against this operation and substitutes one of his own devising. In this lies Franco's greatest contribution to surgery. It must be remembered that up to this time an operation for bilateral hernia meant bilateral castration. In fact the great Guy de Chauliac stated that in his opinion hernia could not be cured without removal of the testis and cord. Franco thought differently and advocated an operation, which, in the dissection, differs but little from the modern operation though of course there was no suture of the layers of muscle and aponeurosis forming the walls of the canal. At about the same time another herniotomist, Caspar Stromayr, whose manuscript dated 1555 was not found until a few years ago was doing the same operation. To which one priority belongs is not

known for neither one refers to the other. As Franco published his work while Stromayr left his in manuscript form the credit has naturally gone to Franco. He describes also the operation in which woven wires of gold are inserted to hold the hernia in place, to which the name "Point doré" had been given. In all cases he advises drainage of the scrotum at its lowest point to ward against infection. Throughout the work he cites clinical cases to emphasize the exact point which he is trying to make and everywhere his explanations are clear and detailed leaving no doubt in the mind of the reader that the man is giving the results of his personal experience.

Though the treatise on hernia dominates the book, it would be unfair not to call attention to the fact that Franco was probably the first surgeon to practice suprapubic lithotomy successfully on a child upon whom he performed it after failing to remove the stone by perineal section. He also improved the operation of perineal lithotomy by devising an itinerarium and stone forceps which were much better than any in use before his time.

The remainder of the work treats of diseases of the eye, obstetrics, amputation, and general surgical conditions. It offers little of moment beyond the usual surgery of the period.



The French Surgery of Dalechamps

THOUGH called a French Surgery the name is somewhat of a misnomer for the subject matter is by no means confined to the common practice of the French surgeons of the time. Rather the book deals with a compilation of the ideas of the early surgeons and adds the work of the later ones to whom the author refers. It is interesting to note that he reproduces Paré's instruments and refers to him as the ranking surgeon to the King. This is remarkable for Jacques Dalechamps was of those who considered themselves the elect, while Paré was merely a barber surgeon.

Born in 1513 at Bayeux in Caen he apparently had a good fundamental education and later studied at Montpellier, the great university of France, receiving the degree of Doctor in 1545. He then settled in Lyons where he practiced and taught medicine in the university until the time of his death in 1588. Dalechamps was therefore a surgeon of civil life. There is no record of his serving in the wars, so the probabilities are that he saw little of the true surgery of his time, that of war wounds and trauma. Rather he was the student. He had evidently a fine

CHIRURGIE FRANÇOISE

RECUEILLIE PAR M.
JAQVES DALECHAMPS,
Docteur Medicin, & Lebteur de
dinaire de celle profes-
sion à Lyon,

*Avec plusieurs figures des instruments néces-
saires pour l'opération manuelle.*

La page 14. contient les principaux chefs de ce
qui se discourt en cest ouvrage.



À LYON,
PAR GUILLEME ROVILLE
M. D. LXX.

Aucq priuilege du Roy.

(A)

Figure de l'Ectropion, & de l'incision ne-
cessaire tant intérieurement qu'ex-
teriorurement.



(C)

A L'incision externe
se faict de long.
B L'incision interne
se faict de long
au droit de l'exté-
rieure.
C Les deux inci-
sons obliques.



Addideris vocem, fuerit Dalechampius ipse.
Expressa ad viuum, cuius imago fuit.

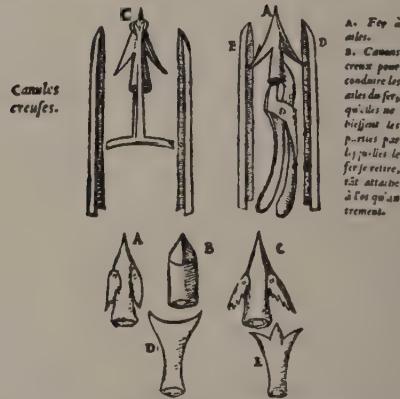
Δεικνυον τὸν γραπτὸν μερὸν τὴν γράμμων εἴδος
Εὐημένης αἰνιτέ τοῦλα τοῦτο γράφει τὸν.

(B)

CHAPITRE LXXXVIII. 591

La manière comme & doit
appliquer l'instrument au
fer, de quelque forme
qu'il soit.

Bec de corbeau.



A. Fer à
ailes.
B. Cannes
creux pour
conduire les
ailes du fer
que celles ne
bienjouent les
parties par
lesquelles le
fer se retire,
est attaché
à l'os qu'au
tremblement.

(D)

A. TITLE PAGE OF THE 1570 EDITION. B. PORTRAIT OF THE AUTHOR. C. ECTROPION AND INCISIONS IN THE OPERATION FOR ITS CURE. D. METHODS OF WITHDRAWING ARROW HEADS AND DIFFERENT TYPES OF ARROW HEADS ILLUSTRATED

education in the classics for he is pre-eminent as a translator of the early Greek and Latin surgical literature. To this he devoted much time and among his writings are found translations of the three Books of Galen, of Caelius Aurelianus, of Paulus of Aegina, of Guinter of Andernach's Latin translations of the ancients, of Pliny, and of Dioscordes. In addition to being a surgeon, Dalechamps was a trained botanist and ranked as an authority in this field. In 1586 he published his "General History of Plants" consisting of eighteen books in which he systematizes the then knowledge of plants. Here again he is seen as the student and classifier rather than as the research worker in the field of practical nature study. From his prominence in botany he had the honor of having one of the varieties of the Euphorbiaceae named after him.

As did many other men of his time, Dalechamps saw the regression of and diminution in the knowledge of the classics and recognized the need of text books of surgery written in the language of the time in order that surgical training might be accessible to more men than if it were restricted to those of a classical education. Consequently in 1570 he produced his book through Guillaume Roville at Lyon which he entitled "French Surgery collected by M. Jacques Dalechamps, Doctor of Medicine, and Lecturer of this Profession at Lyons with many figures of instruments necessary for manual operation." In the 'Preface to the Reader' Dalechamps gives us a glimpse of the controversy going on then as now, as to which of the two major divisions of the healing art, surgery or medicine, is the more important. He, of course, being a surgeon, proves to his own satisfaction at least, that as a therapeutic measure, surgery is of the greater value. This controversy waged for many years, especially in France, and came to such a pass that in 1723 a medal was struck which

marked the subordination of Surgery to Medicine, but the medal failed to accomplish its purpose.

Following the preface is given a summary of the principal subjects covered in the volume. This summary epitomizes the contents and gives such a clear idea of the volume that I translate it here.

"1. The sixth book of Paul of Aegina, in which true surgery is explained, faithfully translated from the Greek.

2. The passages of Æcius in Greek, Cornelius Celsus in Latin, Avicenna and Albucasis in Arabian, which concern the matter treated by Paul.

3. The discourse of Hippocrates concerning fractures of the bones and dislocations of the joints, fully and richly set down, in addition to what Paul has written.

4. The conformity of illustrious and famous practitioners, both of our century and our predecessors to the operations described by Paul.

5. The corrections, annotations, and commentaries on the text of Paul by M. Jacques Dalechamps, of Caen in Normandy, Doctor of Medicine, and Lecturer on Surgery at Lyons.

6. Many illustrations of surgical instruments mentioned by the author or employed by modern surgeons in performing the operations described here.

The whole in our vulgar French, for the benefit of companion and master surgeons who are not versed in Greek and Latin letters."

Dalechamps makes no pretense of originality. He reviews the various surgical procedures and tells what he thinks of them as best he can. Where he has had no personal experience he gives the results of others. He does not always give references to individuals and for this he has been taken to task by some reviewers.

But the fact that a graduate of Montpellier gives credit to Paré atones for many omissions: Speaking of amputations he says "M. Ambroise Paré a famous surgeon of our time in the 7th book of surgery advises the use of the 'bec de corbeau' and needle puncture to arrest the flow of blood after the removal of a member without employing the cautery, either actual or potential, which causes extreme pain, fever, syncope, and consumes large amounts of fleshy and nervous parts, by reason of which the bone remains bare and uncovered and often the tissue is not able to cicatrize and an incurable ulcer remains."

In addition to the credit which Dalechamps gives openly to Paré there is a still deeper meaning given by the volume itself, for it is the first surgery by an educated Frenchman, a graduate of a great French University to whom the degree of Doctor had been given, to be written in the vernacular. Heretofore medical and surgical instruction in the Universities had been given in Latin and the text books had naturally followed suit and were written in that language. This book shows that the fact that times had changed was being recognized. That Paré, a barber surgeon, could become the foremost surgeon in France, with Franco, another of the despised itinerants, not far behind, demonstrated plainly that the Universities, if they were to hold their pre-eminence, must change their tactics and bring these potential great men of the future into their ranks by making education accessible to them. Moreover surgery needed these men. The acrimony and bitterness between surgeons and medical men was so great that surgery could no longer afford to be divided in its own ranks by differences between surgeons of the long robe and those of the short robe.

By the recognition of these facts evidenced by the publication of his book in French rather than Latin, Dalechamps demonstrated his desire to advance his science.

**OFFICINNE
ET JARDIN DE
CHIRURGIE MILITAIRE**
CONTENANT LES INSTRUMENTS ET
PLANTES TRES NECESSAIRES A TOUS CHIRURGIENS AVEC
CERTAINS CATALOGUES DES INGRÉDIENS PROPRES A
CHAQUE MEMBRE TANT SIMILAIRES QU'ORGANIQUES.

Dédié à haut & puissant seigneur M. François Gouffier,
Général de l'Armée du Roi et Chambellan des deux ordres du Roi.

Plus un traité des contrepoisons & cure de la Peste
& déclaration d'un Enigme le tout expérimenté
& mis en lumière pour l'utilité du public.

Par Eustache le Liénard Chirurgien.



Chez Robert Coulombel rue sainte Iean de
Latran, à l'enseigne d'Alde.

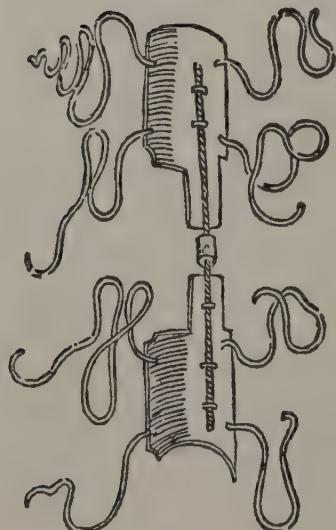
1583.

Avec privilège du Roi.

(A)

**LES INSTRUMENS DE LA
bontegne militaire.**

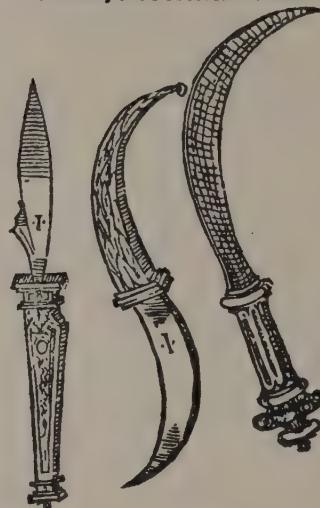
Coutures sèches.



(C)



Lancette, Rasoir ou couteau courbe.



(B)

Coutures sèches.



(D)

A. TITLE PAGE. B. LANCETS; THE LANCET RING SHOWN ABOVE; C. REMOVABLE SPLINT. D. SPLINTS APPLIED



The Pharmacopoeia and Garden of Military Surgery

WITH the above as the beginning of its title a most interesting little surgery was published in the latter part of the sixteenth century. The full title, translated rather freely reads: "Pharmacopoeia and Garden of Military Surgery containing the instruments and plants necessary to all Surgeons with lists of certain ingredients proper for each organ both medical and mechanical. Dedicated to the high and mighty Seigneur M. Francois Gouffier, Sire of Crevecoeur, Chevalier of two orders of the King, etc. Further a treatise of antidotes and cure of the Peste and declaration of a question, the whole tried out and brought to light for the use of the public by Esaie le Lievre Surgeon. At Paris by Robert Coulombel rue Sainct Juan de Latran, at the sign of Aldus, 1583, with the privilege of the King."

The functions of a book are numerous and one of the most prominent is its appeal and the reason for this appeal may lie in any one of several things. It may be more understandable to say: Why do we like this or that book? It may not be the contents, for many books, especially from the collector's standpoint,

have an appeal which has no relation to the contents. Of course, one of the first drawing points is the format, and here is a little book that from its very make-up is attractive. There is something about a thin, small book, just the right size to fit the coat pocket, beautifully printed, whose paper crackles, and whose type is clear and well blocked out on the page that seems to give an invitation which says: "Look me over, read me, and see if you cannot find something you like." It is just so with this little Garden of Surgery by an author who is practically unknown. I say this because he is passed over with scant mention by some and wholly ignored by others of the medical historians in whom we place confidence. But nevertheless the book is fascinating. It makes its first appeal because it looks interesting. The title intrigues the curiosity. "Officinne et Jardin de Chirurgie Militaire." Call it pharmacology, pharmacopoeia, or dispensatory and garden or what you will but we get the vision of the garden where the herbs and flowers grow which are to be employed to make the various lotions and ointments to be used on the wounds described by the author, most of which are war wounds, for Lievre was a surgeon who had followed the wars and he tells us that what he advises he knows as the result of personal experience and trial. He shows by his illustrations how the flowers and plants we are to gather appear, so we will make no mistakes and just how we are to use them in making our preparations. In fact the latter part of the book is a miniature Herbal.

In the dedication the author endeavors to stimulate his patron, Seigneur Francois Gouffier, to follow the example of King Francis I in establishing a school of surgery: this one to be in Picardy, but in this he was apparently not successful. He hints at this but he directly expresses the hope that the dedication of

his volume will result in the practice of true surgery in Picardy, directed and sustained by the desires and powers of Gouffier.

From this we learn that Lievre was a surgeon of Picardy, and here another appeal of this book enters. The very name of Picardy brings visions of almost all of war surgery. The mind reverts to the days of Crécy and Agincourt, and we visualize King Henry V with his little army of a thousand men at arms and six thousand archers against four times their number of the French weighted with armor, fighting in the mud. Here the wounds were made by the mace and arrow. A little later the first St. Quentin in 1557, where cannon and the harquebusse came into play and wounds such as those of which Lievre wrote were made and treated. Then a later St. Quentin in 1871 with higher powered arms, and more penetrating wounds, and finally that line through Picardy from 1914 to 1918, and we think of the Somme and Soissons, Montdidier, and another St. Quentin with the ripping, tearing wounds of shrapnel and shell and high explosive. Through all this period is the search by surgeons for the "Therapia Sterilans Magna"; in the sixteenth century the flowers and herbs of Lievre and in the twentieth inorganic and organic chemical compounds. But let us listen to Lievre on the treatment of wounds. "—the first intention of the surgeon consists, primarily, in the ablation of foreign bodies. It is expedient, to begin with the execution of the above intention and this will be necessary not only in wounds made by arquebusses and pistols but also in all others." And he goes on to describe pieces of bullets and darts, and also clothing, harness and gangrenous, contused, and mortified tissue—all of which must be removed. And then we pass on three centuries and more and after a search of four years for the ideal antiseptic, we sum up all he said in the single word—debridement.

One of the illustrations in the book deserves special mention—the lancet ring used by the surgeon to open abscesses (see illustration). It consisted of a finger ring to which was attached a knife blade hinged at one end so that when not in use it could be folded down and the point and edge protected by a groove in the ring itself. The circlet of the ring was highly ornamented so that at first glance it appeared as an ordinary finger ring and its sinister character was concealed. We must remember that at this time anaesthesia, local or general, was unknown, and what surgery was done had to be done quickly, especially in children. In opening an abscess the business end of the ring was turned in toward the palm of the hand and the blade opened unbeknown to the patient. The surgeon under pretense of examining the abscess, stroked it a few times gently with his hand until he determined the best place to open it and then the next stroke was not gentle for it was made with the palm of the hand flat, the knife entered the skin and with a swift stroke the abscess was opened, the pus exuded and so did the confidence of the patient in the truthfulness of the surgeon.



The French Surgery of Guillemeau

IT WAS to be expected that the genius and outstanding superiority of Ambroise Paré should attract the attention of younger men in surgery in spite of the fact that he was the subject of bitter attacks by many surgeons of high position in France. Originality attracts youth. Among the foremost of those who placed themselves under Paré's tutelage was Jacques Guillemeau. His family had been prominent for many years in the surgical world in France and his father had been surgeon in ordinary to the King. Born at Orleans in 1550 he received a classical education and studied the works of the old masters of medicine. He studied anatomy under Riolan; surgery under Courtin; and finally attached himself to Paré as his student and served with him in many of his campaigns where he had the opportunity to observe his work closely and learn his methods. He also saw the work of many other surgeons of different schools and nationalities, and so obtained a well rounded experience and a considerable fund of knowledge, for his work shows him to have been a keen and intelligent observer. He returned to Paris in 1581 and later became one of the surgeons



TITLE PAGE OF THE FRENCH SURGERY OF GUILLEMEAU, PARIS, 1594

at the Hotel Dieu, and finally in 1595 was appointed provost of the College of Surgeons. He received many honors at the hands of royalty and served as surgeon in ordinary to Charles the Ninth, Henry the Third, and Henry the Fourth. The date of his death is given differently by various authorities. According to the Index Funereus of the Surgeons of Paris it is March 13, 1609, others give it as late as 1613.

Guillemeau was a prolific writer and covered the field of medicine fairly well. Among his publications are, a treatise on Disease of the Eye, an Anatomy, and works on Obstetrics.

His surgery was first published in Paris (1594) under the title "*La Chirurgie françoise recueillie des anciens medecins et chirurgiens, avec plusieurs figures des instrumens necesseres pour l'operation manuelle, par Jacques Guillemeau d'Orleans, Chirurgien du Roy et Juré a Paris.*" (See illustration.) The English edition published in 1597, bears as its title: "*The French Chirurgerye, or all the manuelle operations of Chirurgerie, with divers & sundrye Figures, and amongst the rest certayne newfownde Instruments, verye necessarye to all the operationes of Chirurgerie. Through Jacques Guillemeau of Orleans ordinarye chirurgiane to the Kinge, and sworn in the Citye of Paris. And now truelye translated out of Dutch into Englishe by A. M.*" The drawings of the title page of the French edition of 1594 (see illustration) are worthy of study both as examples of beautiful engraving and as illustrating the surgical procedures of the period. Note, for example, how cleverly the artist has worked in the instruments, bandages, etc., in the different drawings.

Guillemeau apparently had no desire to precipitate himself into any such controversy and unpleasantness as his master Paré had to undergo for he takes every precaution against criticism and absolves himself of any attempt at originality. He likewise

states plainly that he is writing the surgery at the request of, and simply for the purpose of teaching younger men and beginners in surgery. With reference to originality, he says (using the English translation) "And if so be any man obiect unto me, that this my discourse is only, compilede together of certayne rapsodyes of the antique Chyrurgians, I willingly heere confes & acknowledge, that in this Treatise, there is verye little, or nothing at all of myne own Inventione." This fear of attack seems to run through his mind for he refers to it constantly and as a closing word after entreating the medical profession to receive the work without too much malediction he appends the verse:

"Some men do reade to reap some good thereof,
Others to mocke, and howld thereof a soffe,
It is more ease heerin to reprehende,
Then anye thing therin, for to amende."

He does, however, break out once when, in referring to the illustrations of instruments, he says: "In like sorte must the Chyrurgiane, an imitatore, and administre of Nature, endevoure and constraine himselfe, with few Instrumentes to execute and effecte, manye & greate operations. And to speake the playne truth all this greate compayne and treasure house of Engines, Molitiones, and of other Chyrurgicall Instrumentes, are more for curiositie & ostentatione, then for anye necessitye, and use."

The surgery proper is divided into several parts. The preface deals with diagnosis and prognosis in wounds and it is interesting to note it contains a chapter on the methods of rendering reports of wounds to magistrates. Then follow chapters on the removal of projectiles and foreign bodies from wounds. Signs and symptoms of fracture of the skull: The treatment and suture of

wounds: The opening of abscesses: Diseases of the nose and mouth in which he discusses hare lip, epulis and ranula, and describes removal of the tip of the uvula, and pulling of teeth. In his plates he illustrates false teeth: Bleeding, leeches, and boxes (cupping): Diseases of the bones and joints and amputations: Cauteries and setons: Bandages and splints.

In the English translation the "Manual Operations" is followed by a discourse on the "Bloody flix or Dyenterye" again impressing the fact on the reader that the author was a war surgeon and considered this subject necessary for one who was to attend armies in the field. The work closes with "An apologye for the Chirurgians" and a copious index.

After reading the volume, one is impressed by the fact that he has been reading Paré in a methodical form; and has come closer to Paré's reasoning and methods. This is especially true after having read Paré himself, for delightful as that reading is, it is more in the form of a narrative, and one forgets the scientific because of the preponderance of the personality of the man. Guillemeau had absorbed Paré's science and being a compiler and classifier put the information in assimilable form and gives us Paré's surgical methods from the standpoint of the instructor with the personality left out.

DE
CVRANDIS
VVLNERIBVS

SCLOPET-
TORVM,

AUTHORE LEO-
nardo Botallo Astense
Medico.



LVEDVN

APVD GYLLERMVM ROVILLIVM,

SVE SCVTO VENETO.

M. D. LX.

(A)

80 DE CVRANDIS VVL.

Sed nec hippocleati vestes, eleuatoria dicta, sub silentio sunt prætereudi; quorum officio rostris coruinis, vel gruinis, inuicem adiuuantibus, non raro à labore, & periculo patientes liberauimus, vbi potissimum magna sic oſis labefactatio, quorum formas hic subiecimus.



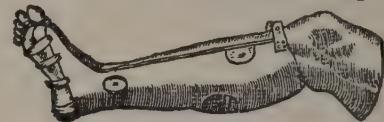
Nunc quomodo horum singulū in vſum veniat, expromere tempestiuſum eſt. Duæ igitur terebrarum figuræ, quarta ſcilicet & tertia ſpharulam oſis fecant, amplitudinē instrumentorū & magnitudini reſpondentem, & vſui præcipuè vieniant in collisionibus vel frācturis, in quibus os firmum eſt, quod auferre eſt neceſſum, vel in frācturis punctū illatis, vel cōtusionibus paruis, vel quæ quandoque ex ſclopētorum glande fit,

(C)

A. TITLE PAGE. B. FENESTRATED LEG SPLIT. C. ELEVATOR AND PRY TO REMOVE BONE. D. METHODS OF CRANIOTOMY

m DE CVRANDIS VVL.

Præterea non periude ut in ſimplicibus frācturis commendantur ligaturæ, ſic, & in hac confeſſe cenfendum eſt. Nam in illa reunio tantum aſſeſſe partis expectatur: hic autem primò extrancari terum ablatio, mox deperdiſti regeneratio, quæ non niſi temporiſ diutinatitare fiunt. Quibus ſuccedere debet ſeparatū partium vnitio, aut (ſi maliſ) copulatio. Pro qua reſatius erit, abſque ligaturis illud immotum, & ſitum, atque naſuraliſ illius figura expedit, ſeruare, tantumque illud pannis tegere, ne aëri expoſitum male habeat. Sed quia quandoque vulnus in membra parte eſt, quæ ſuper ſtrato reponitur, ut poſterior cruris, vel brachij pars, ſic ut nos cogat, quacunque hora curatio- niſ ipſum eleuare. Quod igitur minore mo- tu, minorēque moleſta id fiat, instrumen- tum iam dictum ex arca lamina, in quo



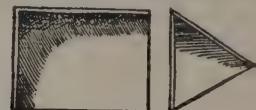
membrum reponitur, ſcindatur, vel perforetur ea parte, qua vulnus reſidet, ſic ut cōmodè

(B)

DE CVNANDIS VVL.



Tertius modus eſt, quam ſine terebellis ſola ſerra & ſcalpris, præcipuè cum os amplum eſt, quod tundendum venit, auferimus, ve- rum ut dictum eſt, ad unco vel acuto ſcal- pro, (ſi liberat) fulci paradi ſunt, ne hoc atq; illuc ſerra fluat, vel pedentim ſecura ma- nu ſola ſerra parare viam poteris, ac quan- tum oporteat ſecare, ad hanc putta formatum vel aliam, ut ipla oſis affeſſio monebit.



Setra brevis eſto, ſubtilis, dentibūſque bene

acu

(D)



Leonardo Botallo, The Cure of Gunshot Wounds

WOUNDS have always been more or less infected from the beginning of time but owing to the forms of the causative agents in early times the great majority of wounds were not particularly severe, when compared to the terribly lacerated and contused wounds caused by the powerful engines of destruction of either peace or war of modern times. Consequently infection, if it did ensue was not, as a rule, a dangerous sequel as nature overcame it and, after a variable length of time, the sanguineous pus changed to laudable pus, the wound granulated and recovery took place. In warfare the poisoned arrow was in common use and the results were known but no accurate differentiation had been made between the results due to the poison on the arrow head and the infection from bacteria. When gunpowder came into use in warfare and wounds became more severe, infection promptly followed and the inference was readily drawn that the infection was the result of poison transmitted to the missile by the powder or that the wounds were burned by the powder. These ideas were put forward by John de Vigo and Alphonso Ferri. No sooner was this theory advanced than opponents

to it sprang up and a dispute arose which was to be carried on among surgeons for centuries until finally settled for good and all by the discovery in the nineteenth century of the causative bacteria. The name of nearly every surgeon of prominence is found in the literature of this dispute, even Paré and John Hunter playing their parts, and among others is found the name of Leonardo Bottalo who published his work "Concerning the Cure of Gunshot Wounds" in 1561.

Bottalo was born at Asti in Piedmont about 1530. He pursued his medical studies at Padua where he received his degree of Doctor of Medicine and Surgery and probably there studied anatomy with the famous Gabriele Falloppio. It may have been about this time in his career that Bottalo's name became inseparably connected with the ductus arteriosus with which it is commonly associated, but how or why this connection of his name with the duct came about is not established, though it was not by the discovery of the duct for its existence was known even in the time of Galen. Being interested in surgery particularly, he was called to war and first served as a surgeon in the French Army where he obtained considerable experience in the treatment of wounds. He went to Paris in 1564 and apparently gained the favor of the Royal Family, possibly because he was a fellow countryman of the then real ruler of France, Catherine de Medici, the widow of Henry the second. Whatever the reason for his success with the Royal Family, he served as physician in ordinary to three sons of Catherine: King Charles the Ninth, Francis Duke of Alençon, and King Henry the Third. With this connection as physician in ordinary to what was probably the most famous, if not the most powerful court in Europe, Bottalo seems to have turned away from surgery and become more interested in medical conditions and particularly in the practice

of bleeding, concerning which the medical world at this time was divided into two camps. Pierre Brissot (1478-1522) had revived the Hippocratic method of bleeding as opposed to the ideas of Galen and the Arabians who taught that blood should be drawn slowly, drop by drop from the side opposite the inflammatory lesion while Hippocrates and his follower Brissot believed that venesection should be free and at the site of inflammation. As was natural, the swing of the pendulum carried many to excess and among these was Botallo who became known for his bleeding and taught that blood should be taken frequently and in large quantities even in chronic conditions. In some cases he bled his patient to exsanguination. Though he did not publish his great book on bleeding until 1577 he nevertheless states his position as a believer in the Hippocratic doctrine of derivation in this work on gunshot wounds, thus aligning himself with the followers of Brissot.

Though he lets bleeding run away with him, he nevertheless holds his head in his treatment of wounds. He does not believe that gunshot wounds are poisoned or burned and in this he says he differs from John de Vigo and Alphonso Ferri. He then goes on to prove, to his own satisfaction at least, that he is right. His method is interesting. He takes up the ingredients of gunpowder one by one and by applying their humoral qualities to them shows that they can neither poison nor burn. To prove his points on burning he goes back to Aristotle, Averroes, and Galen with whose works he appears to be well acquainted—and on poison quotes Dioscorides on the components of powder and shows that they are non-poisonous either when applied locally, eaten, or smelled. He then quotes clinical cases to prove his points and finally leads on to the conclusion that it is the foreign bodies causing maceration and decay of tissue that give rise to

trouble. From this he draws the conclusion that the proper treatment of wounds consists in the removal of foreign bodies and restoration of parts to as nearly normal condition as is feasible. Among foreign bodies he includes pieces of fractured bone, contused and lacerated tissue and blood clots. In fractures of the skull he follows quite closely the teaching of Berengarius of Carpi and, as the illustrations show, his instruments are quite similar.

Botallo deserves recognition as one of the early sound thinking men to whom surgery is indebted for a step at least in its progress toward independent ideas as contrasted with blind following of the ancient authorities.



The Surgery of Giovanni Andrea Dalla Croce

THE sixteenth century had marked the rise of surgery as apart from medicine and toward the latter part of this period it was looked upon practically as a specialized division of medical research. The books which had been published contained much that was philosophical in nature and matters of surgical technique and nomenclature were loosely handled. The greater part of medical literature had its origin with either the Romans, Greeks, or Arabians and consequently the nomenclature consisted of a mixture of these different languages which had never been separated into its different parts and the various synonyms definitely established. The accomplishment of this task of carefully correlating the synonyms for the different surgical diseases was one of the achievements of Dalla Croce.

Of the man and his life but little is known. He was born in Venice but the exact date is lacking. In 1532 he is noted as a member of the College of Surgeons and about 1560 is spoken of as practising surgery in Venice with great distinction. For a time he held an official medical position in the town of Feltre—the town whose name was given to an artist, Pietro Luzzo, who

DELLA
CIRVIA
DI GIOVANNI ANDREA
DALLA CROCE,
MEDICO VENETIANO,

Libri fette:

NE' QVALI SI CONTIENE LA THEORICA ET LA VERA PRATTICA,
¶ si vedono à i suoi luoghi moltissime figure di Stromenti
necessarij in questa professione:

Et finalmente con mirabile ordine si tratta tutto quello, che ad ottimo Cirugico
nel curar' ogni sorte di ferite si conviene.

N V O V A M E N T E D A T I I N L V C E.

Con una copiosissima Tauola di tutte le cose più notabili.

C O N P R I V I L E G I O.



I N V I N E G I A,
Appresso Giordano Ziletti. M. D. LXXIII.

TITLE PAGE OF THE ITALIAN EDITION OF THE SURGERY OF DALLA CROCE
VENICE, 1574

was the son of a surgeon and who originated the then modern grotesques which were so called because the subjects for these arabesques were taken from the decorations of ancient crypts or "grotte." For some reason, possibly because of a particularly joyless disposition, he was called Morto (dead) da Feltre. Dalla Croce died in 1575 shortly after the publication of his work which was issued in 1573.

The "Seven Books of Surgery" by Joannes Andreas de Cruce was printed in Latin and published in Venice in 1573. The following year, an Italian translation was published from the press of Giordano Ziletti, Venegia, and is the volume reviewed here. Dalla Croce's work was considered at the time to be of sufficient importance to run through several editions and to be translated into German as well as Italian.

The work shows little progress along original lines and is rather a compilation of the work of previous authors arranged in an historical manner. Looking through it one is struck by the meticulous attention paid to surgical technique and particularly by the careful illustration of all operative instruments from the earliest times to the time of writing. As an example, the illustrations to the chapter on trephining show at first the coiled strap and bow string trephine and at the end the type of brace and bit which, save for the ornamentation, is practically identical with that in use today. With this factor in mind the volume might almost be classed as a work on operative surgery.

These illustrations of the surgical instruments of the sixteenth century are worthy of study as examples of the craftsmanship of that time, and such study shows that all the energy and cleverness of the artists were not expended on works for the churches and art galleries of the nobles. The Medici family of Florence were patrons of art and had been for nearly a century,

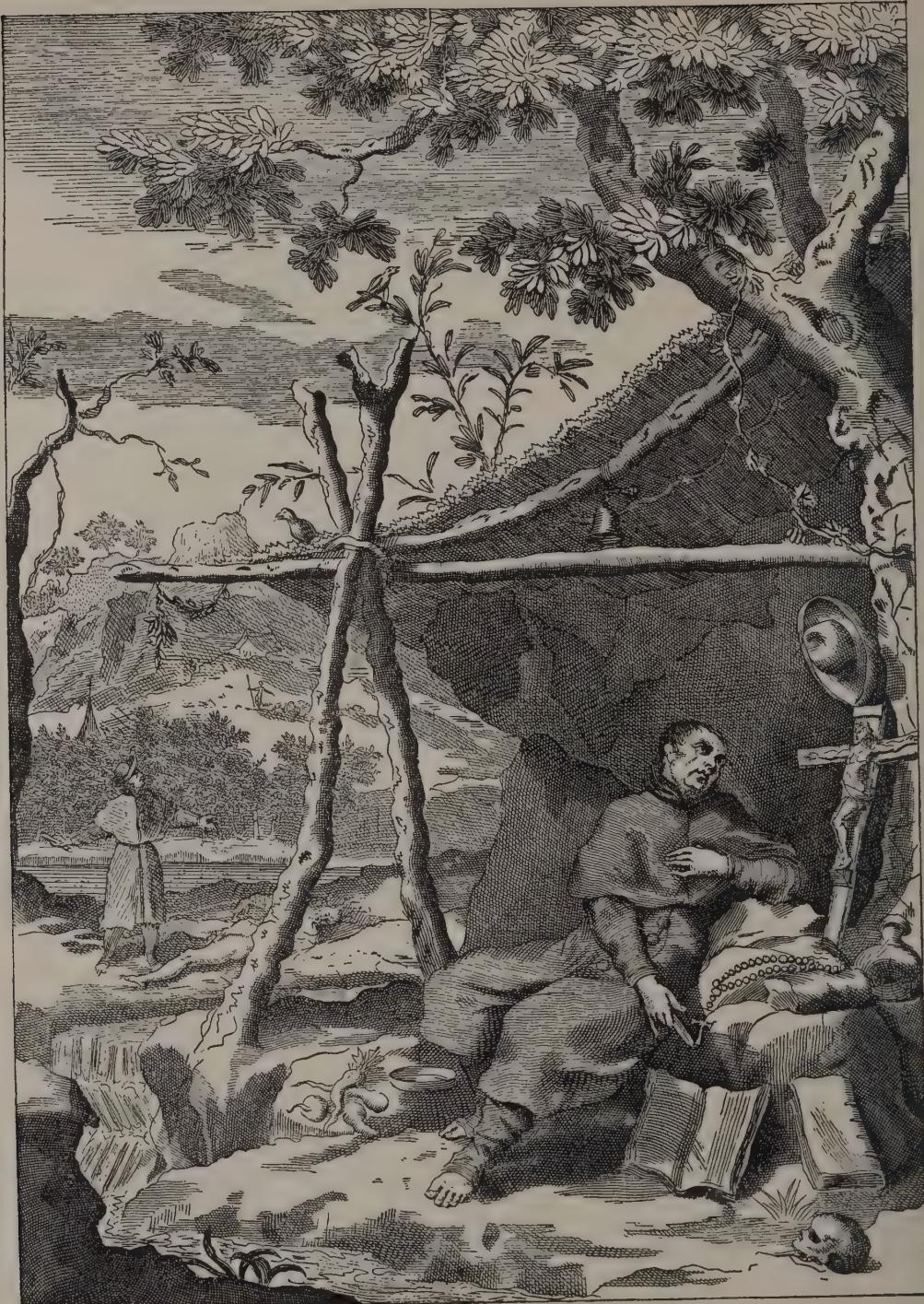
consequently the craft of the gold and silversmith reached its acme in this period. The handles of surgical instruments bear witness that they were designed and executed by no mean artists and may represent the work of some of the greatest. It would not be beyond the limits of reason, for example, to think that Buenvenuto Cellini when he was living in Paris with Guido Guidi and thought so much of him should have designed the handles for some of Guidi's instruments during one of the numerous periods when he was out of favor and stopped work on the beautiful things he was fashioning for royalty.

To return to the book, Dalla Croce, in the introduction, gives as his authorities the older writers from Hippocrates to Albuscasis, and makes no claim to originality. He does not mention Brunschwig, Paré or any of the writers of approximately his own time. That he knew of their work, however, is shown by his teachings. His illustration of the withdrawal of a bullet is plainly a changed copy of Brunschwig's illustration of the same procedure, which had previously been borrowed by Borgarutius to illustrate the *Surgery* of Vesalius (q.v.). Likewise he illustrates Paré's forceps for removal of bullets and his tubes for drainage. In the text he refers to the facts emphasized by these contemporaries. For example, he calls attention to the importance, when searching for a foreign body, of placing the patient in the same position as he was in when he was wounded. This point was previously stressed by Paré as the result of his experience in the case of de Brissac.

The treatment of wounds advocated throughout the book is surprising for its modernity. In simple incised wounds Dalla Croce does not suture but draws the edges together by placing cloth on either side of the wound and lacing the cloths and not touching the wound. He illustrates five types of this form of

dressing for larger or smaller wounds. The idea is similar to the one used during the World War for drawing wound edges together by placing adhesive strips along either side of the wound and lacing the strips together. For suture material he used various forms of needles and either silk or linen thread and of the two he prefers linen. In suturing he warns against dead spaces as likely to cause trouble. For drainage he advises cloth drains, and in some instances uses Paré's perforated tubes. He opens the thorax and advises that the drain be sutured to the skin so that it will not slip into the cavity and be lost.

The illustrations of surgical instruments are a noteworthy part of the volume and show in historical sequence practically all of the best known instruments up to the time. The various forms of arrows, spears, and darts in general use in the war are also illustrated. This compilation of illustrations is the second great contribution which this author made to surgery.



FRÈRE JACQUES IN HIS HERMITAGE



Lithotomy and the Lithotomists

THE story of lithotomy is perhaps one of the most interesting of any surgical procedure. Leading us back as far as records go, we find it mentioned as practised among the early Egyptians, opening up to us a study of their civilization. From that point as a beginning, the path of curiosity if one cares to call it such, or historical research if it soothes the vanity better, leads us down through the course of the ages amid all the various schools of different peoples, and by observing as we pass, we get an insight into their method, action, and thought. We walk with Hippocrates and learn from him his contempt for those who practiced lithotomy and his sorrow that medical men were looked on as one of the lowest classes of the people. Still he did not see that in belittling the lithotomists he was helping to form that low opinion in the lay mind. Leaving Hippocrates we continue with the physicians of Greece and Rome, and then the Alexandrians and Arabians, those men of science who left a record of their constant endeavor to discover new things in medicine and surgery. From them we pass to the middle ages. At first there is a reversion to ancient teachings

without much independent thought, but as we go on the independent thought creeps in, and physicians no longer are content to take the word of their forbears as law, but branch out

and think and act for themselves. New facts are found in medicine and new modes of practice spring into being. As we go on we find ourselves among the crafts and guildsmen. For the old opinions are so strong that the well educated physician, being of the elect, and of the philosophers, will not stoop to work with his hands, and so leaves that to others, some of whom work with him but many cut the leash and go by



PHILIPPE COLLOT

themselves, practising as independents. We now find many ramifications of our path and perforce, led by that curiosity of ours, go up a byway, here for a way and another there, leading us among the guildsmen on this one and on another we walk with Samuel Pepys and hear of his experiences with his recurrence of the stone and how this one and that one were laboring under it. We go with him to his box maker and help him design the case to carry his stone in so he can show it better and see him pay his 24 shillings for it. We meet John Evelyn and go with him and Pepys to see his brother Richard so that Sam can show his stone "as big as a tennis ball" to Richard in order to "encourage his resolution to go through the operation." Later Pepys invites us

to foregather with him and his friends at one of his annual parties on the first of May when the members of the elect who have been cut for the stone meet to celebrate, with wine and song, their deliverance from the dread malady. We see the stones, handed around in their specially made cases and listen to arguments as to which was the largest and most difficult to remove. The reasons why each was the sickest man that ever recovered and why his was the most difficult case his surgeon ever had. Finally we leave Pepys and his friends, carrying with us a sheaf of those beautiful cards which the English and French dandies had made, with a picture of the stone and the date of their deliverance with any other minor facts that they chose to mention. In France we follow the path with those who are doing the operation. Specialists all in their line, not of the regular medical profession, but evolving new methods and constantly bettering their work. We walk with the Collots, fathers and sons, practising lithotomy for a hundred years, recommended by Ambroise Paré in his time and friends of the greatest surgeons. We see Frère Jacques and spend a time with him in his hermitage and watch him do his new lateral lithotomy.



FRATER JACOBUS DE BRAULIEU

Finally the path broadens. We meet and walk with the regular profession, for the proper place of lithotomy has been recognized and it becomes an operation no longer despised and one to be turned over to a craftsman, but one to be practised by the educated surgeon.

Lithotomy being a necessity has lived, but not because of the effort of those who performed it. For many years it was a craft, practised by semi-ignorant men and charlatans, looked down upon by the educated members of the profession and turned over by them to these men who formed what might be termed a guild, though never organized beyond the general medical guilds. Their methods were secret and handed down by word of mouth and practical precept from generation to generation. As a result the lithotomists flourished through the centuries and preserved their methods and their skill, and rather in spite of their desires and intentions their art has weathered the storms of time. The methods of some of the guilds have not fared so well and are today included among the lost arts and have been lost because of the origin of other methods. For example, in the fifteenth century, Gutenberg invented the movable type and printed his bible. The art of printing came into general use a few years later. Much as printing has done for mankind, at the same time we must regret that as a result, limning has perished and no one has ever been persistent enough to rediscover it. Though we have our beautifully printed books of the last few centuries and though color printing as done at present is undeniably artistic, still when one looks at a beautiful Book of Hours, done on vellum with its painted miniatures the colors of which are as fresh today as when put on and in places sparkling with the wonderfully overlaid gold, one heaves a sigh of regret that the art of the limner has passed into oblivion and is gone.

Medicine and surgery in general of the time preceding the Christian era as well as during the early part of this era was without doubt looked upon as a disreputable profession. The so-called high class physician was either a cleric or a savant and did not demean himself by performing any class of manual labor. This left all surgery to be done by ignorant and poorly educated men who gained their knowledge as they could and practiced with all the charms and amulets and incantations they could muster to fool an unintelligent and trusting public. Another influence affecting lithotomy and also obstetrics was the fact that the knowledge concerning generation was practically nil. Hence charlatanism and secrecy of method flourished.

With all the drawbacks the technique of the operation improved gradually during the period of development and the lithotomists evidently attained great skill and dexterity. As to their diagnostic ability one can have doubts, for the number of operations performed was much greater than it is today. One wonders whether other causes of urinary obstruction such as stricture and enlarged prostate were not operated upon under the name of stone and account for some at least of the incurable fistulæ that all the writers mention and fear so much.

The technique of the operation is described in *The Ramayana*; an Indian work thought to have been published about 250 B.C. In men the operation was through the abdominal wall. The surgeon introduced his fingers into the rectum and pushed the stone up against the abdominal wall and held it there while making his incision through the wall and bladder. Then, by continued pressure the stone was evacuated. The surgeon is warned against leaving any pieces of stone or small stones behind for fear of forming new ones so there must have been some method in use for breaking the stone. In women stones were removed through



FRÈRE JACQUES OPERATING BY THE PERINEAL ROUTE. INSERT SHOWS THE SUPRAPUBLIC
OPERATION

an incision in the anterior vaginal wall continued through the neck of the bladder. Hippocrates neither performed nor taught lithotomy. In fact he advises against it in the oath which his students took for he says: "I will not cut persons laboring under the stone, but will leave this to be done by men who are practitioners of this work." The method of breaking a stone in the bladder was evidently known to the Alexandrian School. In Celsus is found the description of a method which consists in passing a hooked instrument behind the stone to hold it firmly in place. The stone is then broken by a blunt pointed instrument held against it upon which the operator pounds. The method of Celsus, slightly changed by Paulus, persisted for many years and was recognized as the standard to be used. The instruments used to deliver the stone were hooks and spoons. The forceps was introduced at a later date but just when is not definitely established. Albucasis warns against performing the operation on any but young people for fear of death or persistent fistula. Brunus describes the lithotomy position, though he does not name lithotomy, when he describes the method of pushing an impacted stone out of the neck of the bladder with the finger or a catheter in patients too old for lithotomy for he advises tying the legs to the neck with a long bandage. In the works of nearly all the older writers, methods of treating or removing the stone are found. Lanfrancus goes so far as to advise suture of the wound after operation. Many writers speak of removal of clots with the finger after the removal of the stone. Perineal lithotomy was in use as described by Rufus, and the danger of sterility following this operation, because of cutting of the "vasa spermatica," was noted. The operation was further simplified by the appearance of two instruments. The so-called itinerarium which was a sound to locate the proper place to make

the incision and the forceps with which to withdraw the stone or hold it while it was being broken by chisel and hammer.

Benedetti describes median perineal lithotomy through the neck of the bladder. Dalla Croce describes the operation of Celsus and adds the technique of holding the stone with forceps while it is broken with chisel and hammer. Franco describes the two-stage operation to be used in old and weakened patients. The incision is to be made first and the stone removed the following day. He also stretches the wound with a gorget to remove the stone. The instruments advocated and employed by the various surgeons differed slightly but are basically the same. They may be found illustrated in most of their works.

The sixteenth century saw the rise of the famous Colot or Collot family of lithotomists. The first of the line, Laurent, was a friend of Ambroise Paré and from him received a large amount of practice. He learned the operative technique from Ottaviano da Villa who in turn had been a pupil of the famous Mariano Santo di Barletta; famous because in 1534 he published the description of the so-called "Apparatus Magnus or Major" the then perfected method of lithotomy, which also passed under the name of Mariano's cutting for the stone. It has been shown that Mariano was not the originator of the method but learned it from Giovanni de Romani of Cremona who in turn probably obtained his knowledge of it from Battista di Rapallo, the father of Giovanni de Vigo. Laurent Colot's sons, Laurent and Jean, both practiced lithotomy. Another famous Colot was Philippe (1593-1656), the father of Francois (1630-1706), the last of the line who left a record of his work which was published posthumously at Paris in 1727.

One of the most picturesque figures in the history of lithotomy was the hermit monk, Frère Jacques de Beaulieu (1651-

1714). Originally a common laborer and later a soldier, he gradually learned something of medicine and finally became a lithotomist of great reputation. Later in life Jacques Baulot joined the Franciscans and became Frère Jacques, the anchorite and hermit and added to his natural skill the necessary personality to make him famous over all of Europe. He practised both suprapubic and perineal lithotomy, but was apparently partial to the perineal method as he passes as the inventor of the operation of lateral lithotomy. Aside from his portraits and mention of him by others there remains no written record and it is doubtful from his history if he was able to write a record of his observations. The best account of this man, part surgeon, part quack and part fanatic, is to be found in Pierre Dionis', "Cours D'Operations de Chirurgie, Paris, Laurent D'Houry, 1707. His work was apparently good and his record, what there is of it, remains as that of one of the greatest of what may be called the famous journeymen lithotomists.



Representation de la pierre extraite
de la vessie de D. Donné Danse, Maître Armurier
à Liège, âgé de 48 ans, parfaitement guéri en quatre
semaines par le chirurgien Lithotomiste G. J.
vanden Broeke, à Gand en Flandre le 12 Août 1796.

Representation of the stone extracted from the bladder of D. Donné Danse, Master Armorer at Liege, aged 48 years, perfectly cured in 4 weeks by the Surgeon Lithotomist G. J. vanden Broeke, at Gand in Flanders, the 12th of August, 1796.

Das Ander Teil.

15

In dem Andern Teil wird angezeigt und beschrieben / von den mängeln und gretchen der Augen / so angericht / und von Stutter leib angeboet werden. Als hiezen / überstieft / unnatürliche kleine eng Augen / auch unnatürliche grosse weite Augen / Das so eine unnatürliche uel vid misstündige farbe am weissen der Augen ist.



(A) C. Drittel

Schielen Augen.

15

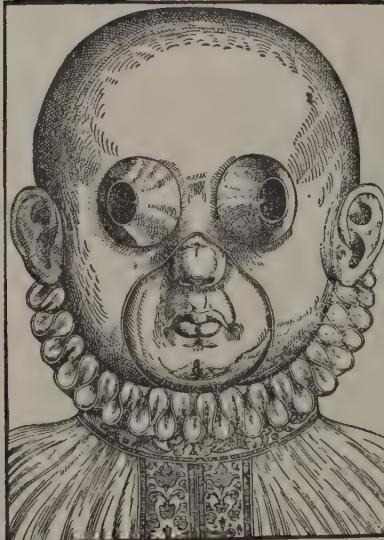
nach dem leicht drehen / kerzen / wenden und richten müsse / es sey bey Tag oder Nacht / allernächsten / so die nicht nach folgende Contraktion und Figur augenscheinlich anzeigt.



(B) S. II Schiel

Schielen Augen.

16



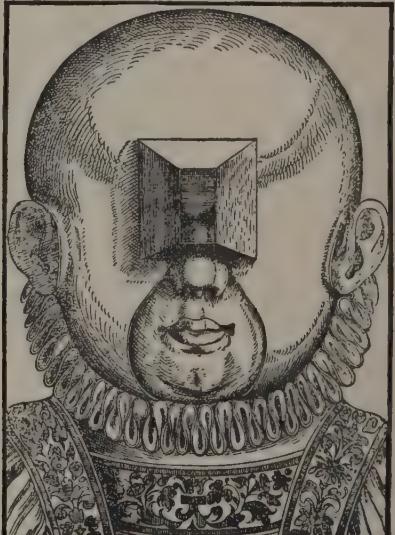
Vermendet aber ein Kind die Augen auswarts gegen den Ohren oder Schläfen / so mus man dem Kinde auch eine sonderliche Kappe oder Kugel machen / dieser gesetz / das sie fornien lang heraus gehe / als ein Sturzhut / die sol deformen eine langliche

Spalte

(C)

Das Ander teil von

Spalte haben / dar durch das Kind sehen möge / wie diese nach folgende Contraktion und Figur ihue anmedden / daran mehr zu schulen und zu verfehen ist / als wenn man drey oder vier Boen voll schreibe.



(D)

A. INTERNAL STRABISMUS. B, C, & D. DEVICES EMPLOYED TO CURE SQUINT



The Augendienst of George Bartisch

THE great improvements made in surgery during the early part of the sixteenth century by von Gerssdorff, Paré and others, together with the progress in anatomical knowledge for which Vesalius was mainly responsible, naturally stimulated study and observation in branches other than general surgery. Because of the prevalence of disease of the eye and the horror of blindness, the organ made a direct appeal to George Bartisch (1535 to about 1606) who describes himself as citizen, oculist, cutting (schnit) and wound (wundt) physician of Königsbrueck near Dresden. Bartisch had evidently, judging from the preface of his book, made a study of the Bible to locate the passages in which the eye and particularly blindness were mentioned. From the Old Testament he got the idea that blindness was a visitation from God as punishment for sin. From the New Testament he gathered that this could and should be cured, for he paraphrases the miracle of restoring the sight of the blind man (John IX) in an ornamental page preceding the list of testimonials which he submits to the reader. Consequently Bartisch lays great stress upon the moral conduct of both patient and

surgeon in the care of eye diseases. In addition he was impressed with the power of incantations which he used to ward off the interference of evil spirits in his work and, fearful lest others might use incantations against his patient or himself, he employed amulets of various types which the patient should wear. Some of these are illustrated and though we may not believe in their efficacy we must admire their beauty of form and artistic value. That Bartisch would choose amulets of an artistic type is natural for he emphasizes the importance of the general education of the physician as well as insisting upon the greatest possible technical dexterity and even the use of both hands. He likewise advocates travel for the physician and also the practice of drawing and painting. It is fair to assume, therefore, that he was acquainted with what was good in art and chose his material accordingly.

Hemmed around by superstition and struggling under this handicap, Bartisch, nevertheless, made the greatest advances in ophthalmology that had been made up to his time and put forward his methods and results in a book published in 1583, under the title of *Ophthalmologieia* that is Eye service—"ΟΦΘΑΛΜΟΛΟΓΙΕΙΑ Das ist Augendienst." He says that the book is a compilation of his own results in infirmities, injuries and diseases of the eye. It is dedicated to August, Elector of Saxony, and the short dedication is followed by a rather lengthy preface in which Bartisch freely states his opinion of the practice of treating eyes of the time and the opinion is far from flattering.

Following the preface Bartisch gives several pages of case reports in the form of testimonials vouched for by the patient or his relatives. The influence of the spiritual is again shown in the heading of the title to the testimonials which is a reference to and translation of Matthew IX—12, "But when Jesus heard

that, he said unto them, they that be whole need not a physician, but they that are sick."

The first part of the ophthalmology proper consists of a discussion of the relation of man to the firmament and the four elements, earth, air, fire, and water, which he believed had a great influence on the treatment of the eyes. Throughout the work he advises oculists to see to it that the proper astrological formulae are used in their treatment.

The anatomy of the eye is carefully described and both the brain and the eye are illustrated by a series of superimposed plates showing the relations of the various parts to one another. In his plate of the muscles he shows the four recti but apparently did not know of the two obliques.

The remainder of the volume treats of diagnosis and therapy. It is beautifully illustrated by wood cuts of various pathological conditions, operative procedures, instruments, and amulets. Bartisch did not believe in spectacles and though he illustrates them, warns against their use, preferring to trust in amulets, prayers and incantations. For squint he uses different forms of masks with holes cut in the proper places to make the patient bring the eyes to normal position in order to see; an ingenious procedure but liable to be very uncomfortable in hot weather.

Bartisch was also an operator and believed in the use of the seton which he advocates in pannus, pterygium, entropion and ectropion and many other conditions. He divides cataract into white, gray, blue, green, and yellow and needles them and depresses them through the sclerotic.

Bartisch was very insistent upon proper after-treatment of his operative cases, a most unusual thing for this time, and gives detailed directions and prescriptions to be carried out. His work placed him far above other oculists and deserves to be

considered the greatest work on diseases of the eye published up to this period.

In addition to his work in diseases of the eye Bartisch was a general surgeon, who operated also upon the stone and hernia. Though his ophthalmology was his principal work—and only one, unless the "Testimonial" cited by Haller, exists—he evidently had it in mind to write works on many other surgical subjects. Zeis found the original holograph request directed to the Elector August dated November 20, 1583 in which Bartisch asks for protection against copying fifteen different works which he says he intends to publish. The first two on the list fit the ophthalmology. Then follow books on kidney and bladder stones; rupture; hare lip, general wound surgery, gout, and other conditions both surgical and medical.

These works were never published, even though they may have been written. If they were, the manuscripts have not been found to date. Bartisch had plenty of time to write a few of them for he lived twenty-three years after the protection was granted. Zeis, however, suggests another reason aside from the books not being written: An interesting fact about the Ophthalmology is that there is no bookseller's or publisher's name in the book. Further in his petition for publication Bartisch says that the Ophthalmology was produced as the result of years of labor and at much cost to himself. It is probable therefore that the other volumes did not appear because the author was unable to find a publisher who was willing to assume the burden and expense of publication; an occurrence which is greatly to be regretted.

Bartisch died about 1606 leaving a son, Tobias Bartisch, who followed in his father's footsteps as an eye and general surgeon, but as he wrote nothing that is extant today his name has sunk into practical oblivion.



The Plastic Surgery of Tagliacozzi

THE times create the man and the man evolves the method. This statement is almost a truism when applied to lines of human endeavor and is no less applicable to science than to other fields. A study of history reveals that there is a distinct interrelation of activities of different members or groups of people and the actions of one group have a direct bearing upon those of another. So in the latter part of the fifteenth and the sixteenth centuries the ever waging of wars created the need for men trained in traumatic surgery. For the use of gunpowder and the invention of more perfect firearms had made wounds much more dangerous and severe than the former wounds resulting from arrows and sling shots. The men were forthcoming and surgery advanced through the efforts of Paré and his contemporaries.

Plastic surgery had its beginning in a similar way, and was due to two agencies. First, syphilis was rampant, especially in southern Europe, and, though mercury was used to some extent, its ravages extended to the tertiary stage and nasal deformities were common. Second, those in power had the very unpleasant

Icon Quinta..



(A)

Icon Sexia...--



(B)

Icon Nona..



(C)

Icon Decima..



(D)

A. MUTILATED NOSE AND FLAP RAISED FROM LEFT ARM. B. THE JACKET FOR THE BODY AND HEAD. C. APPARATUS APPLIED. D. THE RESULT—A NEW NOSE

habit of exhibiting their displeasure by cutting off the noses, lips or ears of those who happened to be disliked by them on the one hand, and on the other, they made the same procedure the form of punishment for minor offenses. The natural result was that those who had been thus relieved of their appendages desired to be rehabilitated and certain surgeons turned their attention to this form of surgery.

The operation of restoration of the nose was an old one going back to the Hindu surgery of Charaka and Susruta when the so-called Indian operation of transplanting a flap from the forehead to form a new nose was described and practised. It had, however, among Europeans at least, been practically forgotten after the time of Celsus. It was resuscitated by reinvention by a family of Catanea known as Branca who were laymen. At first they used the skin of the forehead or cheek and later that of the arm. The method was mentioned and used to some extent by Benedetti of Legnago who was a professor at Padua and an army surgeon, and who died in 1525. The main succession of the method came through the family of Vianeo of Tropaea in Calabria. There were four members of this family all of whom restored noses, lips, and ears; Vincenzo, his nephew Bernardino, and his sons Paolo and Pietro. From this family Caspar Tagliacozzi of Bologna learned the procedure, amplified it, and finally described it two years before his death, although he is supposed to have given a short description of his technique in a letter written to Hieronymus Mercurialis in 1586.

Tagliacozzi or Taliacotius was of a different type than the plastic surgeons who had preceded him. He belonged to the educated class while they had been only lay surgeons. Consequently his methods were worked out from the standpoint of the surgeon who knew the then anatomy and could be considered

as based on scientific knowledge rather than empiricism and practice. He was born at Bologna in 1546 and died in 1599 at the age of fifty-three years. Though he lived a fairly serene life for those days and was protected by political influence, for he was chief surgeon to the Great Duke of Tuscany, to whom he dedicates his book, his body, after death did not have the rest and quiet due it. He was buried in the Cloister of the Church of St. Giovanni Battista and, so the story goes, a short time after the burial a voice was heard in the church proclaiming that his soul was damned and his body should not be allowed to rest in consecrated soil. The result was that the superstitious fear of the people was aroused, and his body removed from the church and buried in the wall of the city. Today no vestige of his burial place remains.

In his early years Tagliacozzi was a pupil of the great Jerome Cardan. After becoming a Doctor of Philosophy and Medicine in 1570, he studied in turn the subjects of Surgery and Anatomy and in 1576 was admitted to membership in the College of Medicine and became professor in the University of Bologna. Two years before his death he gave his book to the world. It was entitled "De Curtorum, Chirurgia per insitionem"—"Concerning the surgery of the mutilated by grafting." The volume was published and printed by Gaspar Binonus at Venice in March, 1597, and constitutes the first complete record of the practice of plastic surgery of the time. It is beautifully illustrated with woodcuts by Francesco Capello, of Modena, who was a church decorator as well as a book illustrator. Taliacotius' reputation as a plastic surgeon, following the publication of his work, spread to other parts of Europe for we find him mentioned, though not accurately, in Hudibras where, in the first canto of Part I, Butler says:

"So learned Taliacotius, from
The brawny Part of Porter's Bum,
Cut supplemental noses, which
Wou'd last as long as Parent Breech;
But when the Date of Nock was out,
Off dropt the sympathetick Snout."

The volume is divided into two main parts, the first entitled the "Theory of the Art of Plastic Surgery" and the second, the "Practice of the Art." In the first part the author discusses the conformation of the nose with reference to the rest of the face and its physiology as to respiration, smell and influence on the voice. He discusses the controversy between Galen and Vesalius as to the function of the foramina in the base of the skull. Whether or not they are canals to carry the excretion of the brain into the nose. Tagliacozzi appears to believe with Galen that they are.

The second portion describes and illustrates instruments and operative procedures and the complications of the latter, such as haemorrhage and gangrene. For the restoration of nose and lip the author uses a flap cut from the anterior surface of the arm and the arm and head are held together by an ingenious apparatus which binds them firmly during the process of healing.

It is somewhat surprising that the author did not use a sliding flap method for either nose or lip; for he knew of the method as he employs it for restoration of the ear, taking a flap from the parieto-occipital region for forming a new upper part and one from the upper triangle of the neck for restoration of the lobe.

Following the excellent illustrations is a very complete index.

HIERONYMI
MERCVRIALIS
VARIARVM LECTIONVM,
IN MEDICINÆ Scriptori-
bus et aliis, libri quin-
que priores,

Ab antiquo aucti & recogniti.

*Quibus adiectus est liber sextus antea
nunquam editus.*

Cum Indicibus copiosissimis.



PARISIIS,

Apud Nicolaum Niuellum, via Iacobæa,
ad insigne Columnarum.

M. D. LXXXV.

TITLE PAGE OF THE PARIS EDITION OF 1585



The Six Books of Hieronymus Mercurialis

ITALY during the sixteenth century was a hot-bed of war and political intrigue. Nevertheless the arts and sciences flourished and grew strong, mainly through the efforts of the family of the Medici—which had gained a position of power in Florence through Cosimo de Medici, called Pater Patriae, who died in 1464. This family encouraged all the arts and among its protégés we find Raphael and Botticelli, the painters; Michelangelo and Pallajuolo, the sculptors; and also the surgeon Girolamo Mercuriale who appears to have become a favorite of a much later Cosimo, the first of the Medici to become a tyrant—Cosimo I who ruled Florence with a rod of iron from 1537 to 1574.

Mercuriale's name also recalls that of the Medici for he was born at Forli in 1530, being the son of a physician Giovanni Mercuriale. Forli was the home of Catherine Sforza, Countess of Forli who married Giovanni de Medici and was the mother of Giovanni delle Bande Nere (The Black Band) who became the only soldier of the Medici family. Catherine's defense of the Castle of Forli is an epic in history, even though it failed.

Mercuriale took up the study of medicine and philosophy, probably at Padua. He was particularly interested in the ancient writers for his volumes are nearly all criticisms or reviews of their works and there is little original clinical work shown. He also, judging from his later career, devoted some of his energy to politics, for it is inconceivable how anyone not a consummate politician, could have gained the high positions he held at this time when intrigue was at its zenith. He became a doctor of medicine and philosophy in 1555. On his return to his home he gained a great reputation and seven years later was entrusted with an important mission to Pope Pius IV, the friend and ally of the tyrant Cosimo I of Florence. This took him to Rome and gave him access to the great libraries where he could study the works of the ancient authors, not only from their recently printed works but also from the manuscript copies then extant. He remained in Rome for seven years working along these lines. His next position was more political than medical for he was sent to the Senate at Venice, but this did not last long and he was called to fill the chair of professor of practice of medicine at Padua. There his learning gained him a great reputation which spread outside Italy, for in 1573 he was called in consultation by the Emperor Maximilian II, for which service he was created a Knight. He remained a professor at Padua a little more than seventeen years and later held successively the professorships at Bologna and Pisa. Finally he resigned his position at Pisa and returned to his old home in Forli where he died in 1606.

Mercuriale wrote, or at least served as the inspiration of many books, for some that pass under his name were actually written by others. His "Variarum Lectionum in medicinae scriptoribus et aliis libri IV" "Four books of various interpretations of the writers of medicine and others" is one of the most

important. In 1576 it was published in Basle and a fifth book added and in the work examined here the title page reads "The five previous books of Hieronymus Mercurialis of various interpretations of (the works of) the writers of medicine and others, augmented and reviewed by the author; to which is added a sixth book never before published. With a most copious index. At Paris, at the shop of Nicholas in the street of Jacob, at the sign of the Columns, 1585."

It is astounding the amount of reading and research the book shows, for Mercuriale has contrasted the different views of ancient writers upon various topics and discusses critically their points of agreement and disagreement. As an example, one of his paragraphs is entitled "The Opinions of Aristotle and Strabo concerning the generation of animals in snow and fire collected and examined. The opinion of Aristotle amended." In parts of the work he makes an exhaustive study of names of materials and procedures used by the ancients and explains what they meant when translated into terms in current use. There is nothing mentioned in the book concerning modern authors or practitioners which alludes to them by name; but modern methods are often cited and contrasted to those of the ancients. In looking over the work, one should bear in mind that though Vesalius, Paré, and many others endeavored to overthrow ancient ideas and had in part succeeded, their methods were hammer and tongs insistence on their own ideas backed up by submitting their data to proof. Mercuriale, on the other hand, was the political compromiser and tries to show that though the ancients may at times appear to be wrong, yet they really meant the same thing. Still he did at times take sides and in no uncertain terms, and though a student of the ancients he differed from them in some ways, for he upheld the ideas of Brissot concerning bleeding which had

caused such a furor because he (Brissot) disagreed with the ideas of the ancients, particularly the Arabians.

Mercuriale also wrote a work on Gymnastics in Medicine in which he stresses the importance of all forms of exercise on the general health. This subject had practically been forgotten up to his time but his great knowledge of the works of the ancients enabled him to resurrect their physical therapy and save it for future generations. He appears to have been the dean of the medical profession of his period. In addition to being known for his own publications, which were numerous for he was a prolific writer, one finds him mentioned in many of the medical and surgical works of the time; either as an authority on some subject or, as being appealed to for judgment as in the case of Tagliacozzi who wrote to Mercuriale asking his opinion of his plastic work. Mercuriale may justly be considered as one of the most prominent if not the greatest savant in the medical world of the sixteenth century and the "great consultant."



The Anatomy of Realdus Columbus

THE early sixteenth century marked a period of upheaval of old ideas in many fields. That one of the fields thus plowed and harrowed was surgery is easily seen by reference to the works of many of the surgeons of that period in different lands, with possibly Paracelsus as the most outspoken leader. Closely following surgery in this revolt against the old order of things came anatomy, its closest ally, and the van was led by Vesalius who published his six large plates in 1538 which were followed by "De corporis humani fabrica" in 1543 and the "Epitome" published in the same month of the same year. Vesalius' works raised a veritable storm. On the one hand were the "stand patters" represented by the so-called highly educated class who believed nothing could or should supersede or question Galen and the Arabians and on the other the more progressive type of surgeons who believed in going forward. By the latter Vesalius was recognized as the proper successor to Galen and was elevated by them to this pedestal. But Vesalius was in turn to be outdistanced, and by one of his own pupils, Columbus, who succeeded him as professor of anatomy at Padua.

REALDI COLUMBI
CREMONENSIS,
In almo Gymnasio Romano
Anatomici celeberrimi,
DE RE ANATOMICA
LIBRI XV.



VENETIIS, Ex Typographia Nicolai Bevilacqua, M D LIX.
CVM PRIVILEGIIS.

TITLE PAGE OF COLUMBUS' ANATOMY

Matteo Realdus Columbus, to give him his full name, was born in Cremona. His father was a pharmacist and at first he followed in his footsteps. He then studied surgery with Giovanni Antonio Plazzi and anatomy under Vesalius. How much he practised surgery is not known, but the probabilities are that he practised just as Vesalius did. In 1540 he was appointed professor in Padua, and in 1542 filled Vesalius' chair during the latter's absence until 1544, when he was made his successor as professor of anatomy. Later he became unfriendly to his preceptor, but this could not be gathered from his book for in the introduction he writes of Vesalius in terms of high praise. In the same year (1544) he left Padua for Pisa and 4 years later was called to Rome by Pope Paul IV. He died in 1559, the year his anatomy appeared. The book was edited by his two sons and published at Venice by Nicolas Bevilaqua. It bears the title "The Fifteen Books of Realdus Columbus of Cremona, Illustrious Anatomist in the Sacred College of Rome, concerning anatomical things." It is a well printed folio volume but without illustrations save for the beautiful title page, a woodcut depicting a professor demonstrating a cadaver to his students, some of whom are looking on while others are comparing the organs in the body with illustrations and descriptions in anatomies. An artist also is shown seated at the head of the table ready to make drawings when directed by the master.

That Columbus was well aware of the trend of the medical mind at this time and was likewise thoroughly at variance with it is shown by his preface to the reader. Here he writes first of his long labor at dissection and then goes on to say, "I thought there would not be lacking those who would reject these attempts of mine as useless and superfluous, who would set forth with great pride in the light of teaching new things about

anatomy, their own Avicenna, the chief as they say, of students, Mundinus and Carpus, as the outstanding men in Anatomy, concerning whose writings nothing at all seems to be able to be said in this theme." He then speaks a little more kindly of Galen and Vesalius and ends his first paragraph: "However no one could hinder me from writing, since it can be replied easily and truthfully to their frivolous objections, for to those three authors whom they first mentioned, I think this trite verse applies. There are good ones, there are certain mediocre ones, there are more bad ones." He calls attention to the errors of Galen whom he considers a great man and also to those of Vesalius and states he will try to correct both.

As the title shows, the work is divided into fifteen books beginning with the bones and ending with a chapter on anomalies which is the most interesting portion from a surgical standpoint. In this he describes both deficiency in, and supernumerary ribs and vertebrae, ankylosis of the vertebrae and spine, supernumerary fingers and bifid thumbs. Anomalies of the muscular system. Double ureter and single kidney. Adhesions between liver and abdominal wall. Adhesions between lung and chest. Fluid in the thorax. When it comes to calculi he mentions nearly all the calculi which are found: renal; pulmonary; hepatic, both in the liver substance and in the gall bladder and ducts; ureteral—vesical and even those found in the colon and haemorrhoidal veins. He also mentions various types of abscesses and tumors. His experience in post mortem work and dissections must have been, from the conditions he describes, very great, though one may doubt his statement that he had dissected innumerable bodies. In some of the cases he not only describes the condition found but also mentions the name of the individual in whose body it was discovered. In several instances

the body was that of a cardinal which goes to show that Columbus' practice was among the elect.

In addition to the post mortem material Columbus refers here and there to clinical surgical conditions. Some of these seem worthy of mention. He calls attention to the difference between separation of an epiphysis of a long bone and fracture or dislocation and speaks of the greater difficulty of proper reduction of the former which he lays to the irregularity of the surfaces of the epiphysis which must be fitted into each other as they will not heal as does fractured bone. Evidently he had no conception of the function of the epiphysis. He also describes abscess of the mediastinum and its treatment "matter may be collected in the mediastinum that is, between the doubled pleura dividing the thorax into two parts, sufficient of which may be withdrawn safely by means of perforation of the sternum by a surgeon who is careful and most expert in anatomical affairs." He tells also of the paralysis of the muscle of one-half of the forehead after a wound suffered by cardinal Ardingelius who "moved half his forehead: the rest remained entirely without motion."

It is, however, the description of the pathway of the lesser circulation that was Columbus' greatest contribution to medicine. It is clearly stated in his own words: "The septum is between these ventricles, through which almost all think that an opening for the blood is made from the right to the left ventricles, and this in order that, because of the vital spirit the new blood may be returned thinner in the transit. But these err greatly, for the blood is carried through the arterial vein to the lung, and here is thinned out; then it is carried down with air through one venal artery to the left ventricle of the heart. This no one has so far noticed or left writing about, however much it ought to have been noticed by all."

D I C T I O N A R I V M
medicum,

Vel, E X P O S I T I O N E S V O-
cum medicinaliū, ad verbum excerptæ

EX HIPPOCRATE,	AETIO,
ARETAEO,	ALEX. TRALLIANO,
GALENO,	PAVLO AEGINETA,
ORIBASIO,	ACTVARIO,
RVEO EPHESIO,	CORN. CELSO.

Cum Latina interpretatione.

L E X I C A duo in Hippocratem huic Di-
&tionario præfixa sunt, vnum, E R O T I A-
N I , nunquā antea editū: alterū, G A L E N I ,
multo emendatius quàm antea excusum.



A N. M. D. L X I I I
Excudebat Henricus Stephanus, illustris vi-
ri Huldrici Fuggeri typographus.

TITLE PAGE OF ESTIENNE'S DICTIONARY, 1564



The Medical Dictionary of Henricus Stephanus

IN THE sixteenth century medicine and surgery greatly lacked solidarity and unanimity of expression of ideas. This was, of necessity, to be expected, as the expression of medical thought by means of the printed word had been in existence for less than a century, whereas the workers who had served to originate that thought had lived over a period of nearly two thousand years and had written their ideas in numerous languages. Consequently, if one physician followed the Arabians, for example, his terminology might be totally incomprehensible to one who had followed the Greeks and as for the one who followed the vernacular his terminology was a mixture of everything extant. Latin had been for many years the standard language of medicine but the words and ideas of the ancients had not all been translated into that language, and even the works written in that tongue borrowed their nomenclature of disease from whatever author they happened to be conversant with without regard to the language. It was about time for a lexicographer to take a hand and attempt to straighten out the muddle, and Henricus Stephanus

supplied the need. Looking back from the vantage point of nearly four centuries one could hardly have chosen a better man for the task. Born of a family of printers and literati, Henricus Stephanus or Henri Estienne represented the highest type of linguistic culture of his time. His grandfather, Henri Estienne the first (died 1520), had come to Paris from Provence in 1502 and soon founded the printing establishment which for years bore the latinized form of the name "The Stephanus Press." Henri's second son Robert (1503-1559) succeeded to his father's establishment in 1526. The press had been carried on after his father's death by his step-father, Simon de Colines, who had been the foreman and had married Henri's widow. Robert was the member of the family who adopted the familiar printer's mark of the press, the olive tree. He was an excellent linguist and became the King's printer for Hebrew and Latin. However, he became involved in Ecclesiastical controversies, joined the reformed church, and later in 1551 left Paris, practically being driven out, and founded the press at Geneva. Robert's brother Charles studied medicine and took his degree at Paris. He was a pupil of Sylvius and his anatomy published in Paris, in 1545, was really in part pre-Vesalian for some of it had been prepared as early as 1530. Charles continued the Paris branch of the press after his brother's departure for Geneva but did not succeed as he became bankrupt and died in prison. Robert's son, the second Henri Estienne, was educated as a linguist. Because of the many nationalities of the workmen at the press, Latin was the language used by all, consequently it became practically his mother tongue. Greek, he took up as a serious study with Pierre Danes, the foremost Greek scholar in France, and later attended lectures of other famous linguists. He also learned Spanish.

In 1547, when sixteen years of age, he began to hunt for manuscripts, and this carried him to Italy, England, and Flanders, where he not only found and collated rare manuscripts but also came in contact with the most learned linguists of the different countries. Returning to Geneva he set up his own press in 1557, with the assistance of the wealthy Augsburg Merchant Huldrich Fugger, and began to publish the results of his research. In 1559 his father died and the two presses were united.

The principal medical work of this non-medical savant was his "Dictionarium medicum, vel expositiones vocum medicinalium etc." published in 1564. The complete title is "Medical Dictionary or the exposition of the medical meaning of words taken from Hippocrates, Areteus, Galen, Oribasius, Rufus of Ephesus, Aetius, Alexander of Tralles, Paulus of Aegina, Actuarius, Cornelius Celsus with the interpretation in Latin. Two expositions of (the works of) Hippocrates are pre-fixed to this dictionary, one, of Eretian, never before edited: the other, of Galen, much more correct than those which appeared previously. In the year 1564. Written by Henricus Stephanus, printed by the illustrious man Huldrich Fugger." The volume is a veritable marvel of lexicography. Stephanus went over manuscripts word by word, compared the different meanings and interpretations placed on words by the authors, and, finally deciding on a definite terminology, translated the meaning into Latin and then gave the definition of the term. Such a task was monumental and one wonders that he was able to complete it in six years, as he states in his preface written to his friend Philibertum Saraoenum, a physician. It was necessary for him to consult the manuscripts of the different authors that he names and carefully note the differences between their

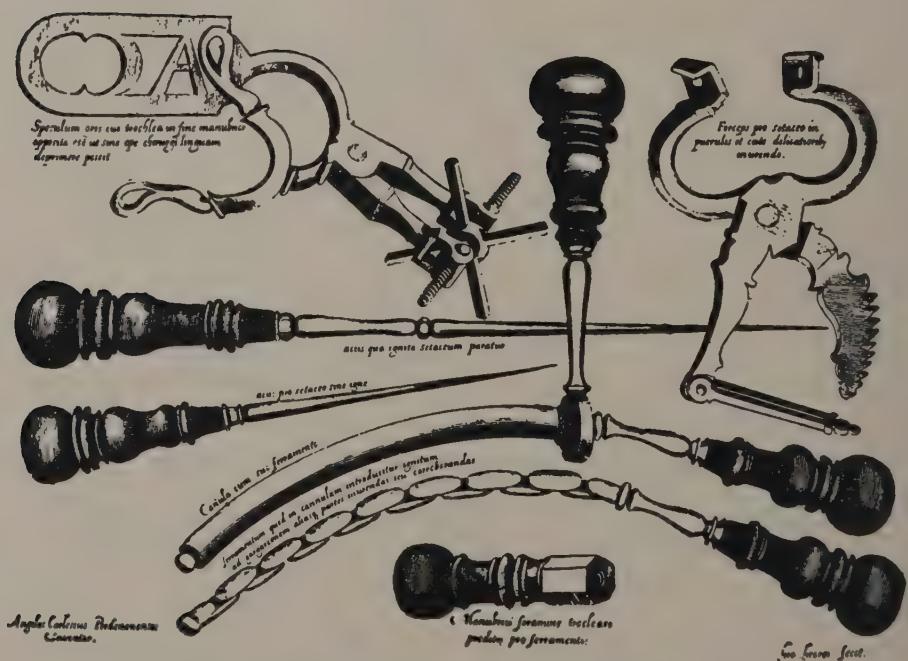
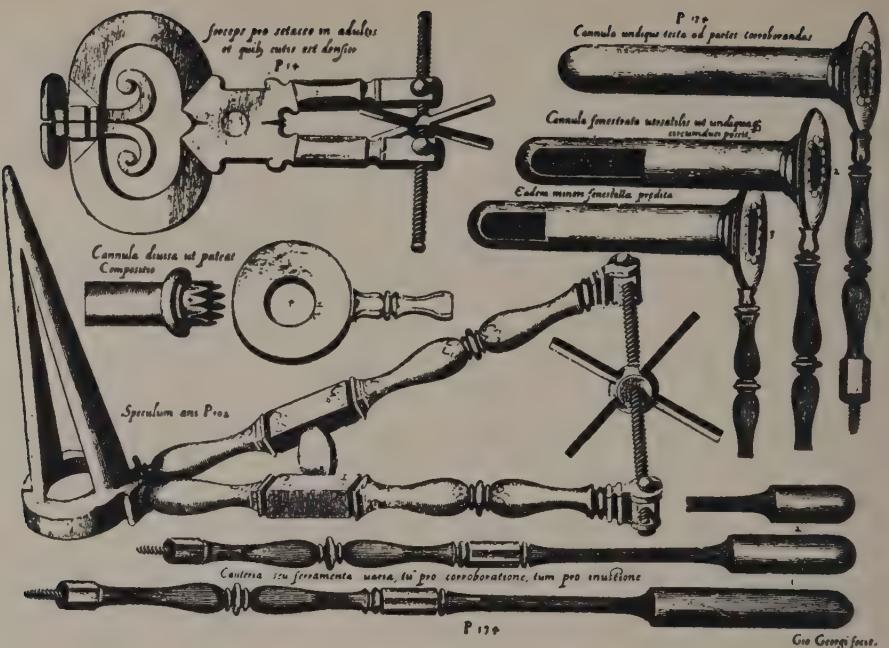
uses of terms. When one considers the number of hands through which these manuscripts had passed and the number of times they had been rewritten and changed one wonders that he had the courage to attempt the work. When, however, one notes the excellent definitions of such pathological conditions as epulis, paronychia, pitiriasis, parotid abscess, angina, and others, one cannot but believe that this work of Stephanus' must have exerted a considerable influence on the standardization of medical terminology.



Fabricius of Acquapendente, The Pentateuch and Operations of Surgery

DURING the latter half of the sixteenth and beginning of the seventeenth centuries, progress and advancement in medical science centered in Italy and particularly at the great school at Padua, which produced many of the famous medical men of the period. Among these was Hieronymus Fabricius. Born of a middle class family in Acquapendente in Etruria in 1537, he decided to take up his medical education at the University of Padua. By his application and intelligence he attracted the attention of the then Professor of Anatomy, Gabriel Fallopius, and became his special student and assistant both in the anatomical department and in his practice. During this time he began his study of the valves of the veins which, though not wholly unknown, were but little understood. His enthusiasm for this subject he later transmitted to one of his students, William Harvey, who carried it out to its conclusion and published the discovery of the circulation of the blood in 1628, nine years after Fabricius' death.

After the death of Fallopius, Fabricius, though only twenty-five years of age, was entrusted with the anatomical demonstrations and three years later, in 1565, was appointed professor of



SURGICAL INSTRUMENTS. FABRICIUS OF AQUAPENDENTE, 1617

surgery in the University of Padua by the Republic of Venice. Six years later he was appointed professor of anatomy and held this position until 1604 when he relinquished his work at the University and passed it on to his assistant Giulio Casserio. In addition to his work at the University, Fabricius enjoyed a very large practice, possibly because of his sanity and conservatism, and received many honors from his state and his city. He was made a Knight of St. Mark by the Republic of Venice and presented with a golden necklace and was made an honorary citizen of the city of Padua. His practice must have been a very lucrative one for he built an anatomical theater for the University, at his own expense, maintained near the city a large estate named "La Montagnola," and at his death in 1619 left a fortune of two hundred thousand ducats.

Fabricius' first surgical work was published in 1592 by Joh. Hartmann Beyer at Frankfort. This was called "The Pentateuch (Five Books) of Surgery." These books were entitled I. Tumors, II. Wounds, III. Ulcers and Fistulae, IV. Fractures, and V. Dislocations. In 1617, two years before his death, the work was published in an enlarged form and the second part, "The Operations of Surgery," added.

The general plan of the work differs but little from the other surgeries of the time. The division of the surgery into books or headings is the same as many others but owing to the author's scientific trend of mind and the application of his anatomical knowledge to the clinical field, he discards much of the necromantic and spiritualistic and bases his ideas on the then known scientific facts. He knew the work of the older authors who were considered authorities, Celsus and Guy de Chauliac in particular, but does not hesitate to criticize their opinions when they do not agree with his own observations. The book

on tumors contains, as all the surgeries of the time, inflammations and their sequellae, swellings of all kinds including oedema, and hernia. Among other things it is stated by the historians that he was the first to differentiate goiter from other tumors of the neck. This statement does not seem to be warranted by the facts. Fabricius himself does not make any such claim for in the "Operations of Surgery" with reference to goiter he says that he refers to the type of tumor described by both Celsus and Paulus of Aegina. "In the neck four kinds of diseases are treated by manual operation; these are, the quinsy, the goiter, the enlarged glands, and the wry neck. We will speak of all, commencing with goiter. This tumor, according to Celsus, occurs in the neck between the skin and trachea, the Greeks call it 'bronchocele' etc." Fabricius then describes the condition a little more carefully and one gets the idea that he is considering only the cystic type of goiter:—"Bronchocele is a word composed of bronchos, which signifies the trachea, and cele, that is to say, tumor, in which signification the ancient authors take it; that is why Celsus says, that it is a tumor between the skin and trachea, being of the class of abscess, according to Celsus, the material of which is contained in a follicle, bag, or tunic, which is sometimes an imperceptible flesh, sometimes a humor comparable to honey, or to water, sometimes as if one had mixed hair with little bones." He refers to the fact that operation is advised by Celsus and also by Paulus of Aegina but refers to Paulus' operation as one for glands even though he notes that Paulus advises careful dissection to avoid the recurrent nerves. There is no doubt that Fabricius refers to goiter for he notes its great frequency in the Swiss Alps "Such tumors occur in a certain part of Bergamum (Cisalpine Gaul) where almost all the men as well as women

carry these large, mobile, soft and pendent tumors in front of the neck, and they carry them all their lives, without pain, and almost without any derangement in all their functions, saying that they come from the water of the country, as if this water being impure (?) had some antipathy or property against these glands, just as cantharides has to the bladder and kidneys. There is no need to cure these tumors, since they do not disturb the patients at all."

In the book on wounds Fabricius describes the ligature of vessels in connection with vascular wounds but does not mention Paré and as he usually gives credit to previous writers it is probable that Paré's method and teaching had not as yet reached Italy. In connection with fractures he describes and illustrates several complex machines for setting and holding fractures. The illustration of his *OPAOMOXAION* is marvelous to behold. It consists of a fenestrated steel casing with joints moved by turnbuckles which apparently fits the patient and holds him rigid. In some of the editions he illustrates apparatus for torticollis, club foot, and various other orthopedic conditions.

In the second part of the work "The Operations of Surgery," Fabricius differs from the majority of the surgeons of his time. So much so, that he was considered ultraconservative. More than that he had carried his anatomy further than the human and invaded the fields of comparative anatomy and embryology. Therefore such a procedure as castration in herniotomy did not appeal to him and the wholesale disregard of haemorrhage seemed to him unnecessary. Consequently throughout he constantly aims to perfect his surgical technique and stimulates others to do the same.

THE
SURGIONS
DIRECTORIE,

FOR
Young Practitioners,

In Anatomie, Wounds, and Cures, &c.

SHEWING,

The Excellencie of divers Secrets
belonging to that noble Art and

Mysteris.

Very usefull in these Times upon any
sodaine Accidents.

And may well serve,

*As a noble Exercife for Gentle-
women, and others ; who defire Science in
Medicine and Surgery, for a
generall Good.*

Divided into X. Parts.

(Whose Contents follow in the next Page.,

Written by T. Vicary Esquire Chyrurgeon
to Hen 8. Edw 6. & Mary & Eliz.

LONDON,

Printed by T. FAWCET, dwelling in Shoe-
Lane, at the Signe of the Dolphin. 1651.
And are to be sold by J. Nutball, at his Shop in
Fleetstreet at the signe of hercules - Pillers.



The Surgions Directorie of Thomas Vicary

FOR nearly a century after the death of John Arderne, which occurred in the latter part of the fourteenth century, England had no surgeon who rose to a position of any prominence. The slight improvement in surgical practice which had been made had been accomplished by concerted action of groups of surgeons and no individual stood out as a leader. There were two main groups or guilds, on the one hand the surgeons and on the other the barbers. These had been quarrelling among themselves until; toward the end of the fifteenth century they entered into a friendly agreement to cease their rivalry and co-operate with each other. This agreement continued in force without any legal or formal action until 1511 when the combined efforts of the barbers and surgeons persuaded King Henry the Eighth to hand down a decree forbidding unqualified persons to practice medicine or surgery. Thus the surgeons became recognized in a semi-official way. Two years later they received further privileges from the crown which gave them definite standing as non-combatants in warfare and relieved them from watch and jury duty. The "Barbers

of London" who had been incorporated by Edward the Fourth in 1462 and the Surgeons of London who were not incorporated still remained separate organizations. In 1540 these two guilds were incorporated into a single organization. "The Barber Surgeons Company," and in the articles of incorporation the duties and privileges of surgeon and barber were laid down. The barbers were permitted to shave but were forbidden any surgery or bloodletting with the exception of pulling teeth, and the surgeons could not shave. With this incorporation the office of "Master of the Barber Surgeons Company" was created and Thomas Vicary was chosen to fill this high position.

Vicary was born in the last decade of the fifteenth century, the exact year being uncertain. He had studied medicine in Naples and Aleppo and in 1525 had been elected a member of the Surgeons of London. In 1528 he was made upper or first warden of the society and one of the surgeons to King Henry the Eighth. As time went on his influence with the Royal Family increased and he served successively as Sergeant of the Surgeons and Chief Surgeon to King Henry the Eighth. After Henry's death he retained the position with Edward the Fourth and in turn with Queen Mary and Queen Elizabeth until his death in 1561 or 1562.

Vicary received also the appointment as chief surgeon to St. Bartholomew's Hospital in 1548 after Henry the Eighth had given over its management to the City of London in the previous year, and this position he held until he was appointed Resident Surgical Governor of the Hospital and in 1552 was made "one of the assistants of this house for the terme of his lyffe." Thus Vicary became the most prominent surgeon in England. He was entrusted with the surgical organization of

the greatest hospital in the land and had three surgeons under him to carry out his ideas which were apparently good.

Though essentially a surgeon of civil life he states that in 1541 he took part in the expedition of King Charles the Fifth against Algiers and here apparently must have obtained his knowledge of the care of soldiers. He refers occasionally to the treatment of wounds of warfare and the diseases to which soldiers are liable. Military surgery does not dominate his writings as it does those of many of the surgeons who followed him.

Vicary really wrote little but as he was the first surgeon to write in English his works gained a great reputation and maintained their supremacy for many years. In 1548 he published an Anatomy in which he included also his surgery. In 1577 the surgeons of St. Bartholomew's Hospital, William Clowes, Will Beton, Richard Story, and Edward Bayly, published a new edition of this book under the title, "A Profitable Treatise of the Anatomie of Man's Body by Thomas Vicary." A further book published by these men which is credited to Vicary is "The Surgions Directorie, for young practitioners, in Anatomie, wounds, and cures, &c. shewing The Excellencie of divers Secrets belonging to that noble Art and Mysterie. Very usefull in these Times upon any sodaine Accidents. And may well serve, As a noble Exercise for Gentlewomen, and others; who desire Science in Medicine and Surgery, for a generall Good. Divided into X Parts. (Whose Contents follow in the next Page. Written by T. Vicary Esquire, Chyrurgeon to Hen. 8. Edw. 6. Q Mary Q Eliz. London, Printed by T. Fawcet, dwelling in Shoe Lane, at the Signe of the Dolphin, 1651. And are to be sold by F. Nuthall, at his Shop in Fleetstreet at the signe of Hercalus Pillers." The book is dated 1651, and unless the date is a misprint it appeared nearly a hundred years after Vicary's death.

The little book consists of Vicary's Anatomy, Surgery, and Pharmacopoeia, and an article on "English Bathes" written by D. Turner and published by W. Bremer. The part devoted to anatomy is practically a compilation of Galen and occupies Part I, "Containing the Anatomie of Man's Body, compiled by T. V. Esquire, for the use and benefit of all unlearned Practitioners in the Art and Mystery of Chirurgerie." It is interesting to note the title above Part I calls the work, "The Surgeons Directorie or ,An Exercise for Gentlewomen," and the same description is found on the title page. The book thus shows a still further transition in medical teaching. Tradition was first broken down when medical books were written and printed in the vernacular instead of in Latin and now comes an example of a book printed for the laity. This was not particularly uncommon in the late sixteenth and early seventeenth centuries. Less so in surgery, perhaps, than in general medicine and obstetrics, for household medical books began to appear and were popular until quite modern times, especially in English speaking countries. Vicary's work seems to have been chosen for popular consumption, for his Anatomy of 1548 was republished after his death by the surgeons of St. Bartholomew's Hospital under the title "A treasure for Englishmen containing the Anatomy of man's body, etc." They refer in the preface, indirectly to its popular use when they say they have "newly revived, corrected, published abroad to the commodities of others, who be Students of Chirurgerie: not without our great studies, paynes, and charges. And although we do lack the profound knowledge and sugred eloquence of the Latin and Greek tongues, to decke and beautifie this worke, yet we hope the studious Reader shal thereby reape singular commoditie and fruite, by reading this little Treatise of the Anatomie of

man's body, the wiche is onely grounded upon reason and ex-
perience, which are two principal rootes of Phisicke and
Surgerie, etc."

The volumes show that Vicary's greatness must rest, not upon his scientific attainments but rather upon his ability to forward the cause of surgery through political favor. In this he was undoubtedly great and to him St. Bartholomew's Hospital and the Barber Surgeons Company in large measure owe their existence.

Something must be said, however, for his treatment of wounds for he insists on the removal of foreign bodies and though he recommends many forms of medicine and believes in them, he places as the prime requisite "the first thing that thou shalt doe to them is to wash them very cleane with wine, and then dry them well," etc. His cleanliness evidently accounted for his good results more than his medicines and ointments.

A Table of luxations and dislocations.

Place this Table in folio. 26.	Simple, and either it is either	Imperfect, and that is	Luxation.		
			peruersio, of either which there are three kinds,	Backwards, Sidelong	Forwards, & is called
Euerie luxa- tion or dis- location is either	Compound be either	Perfect.	Luxatio is	Lordosis	Ciphostis
				Scoliosis.	
Euerie frac- ture of the bone is ei- ther	Simple frac- ture of the bone , of which there are iii. kihs, that is,	Imperfect.	Of these compound Luxations both perfect, and also im- perfect, the chiefe dif- ferences are these fol- lowing, as	Luxation with a frac- ture.	Luxation with an in- flammation.
			1. ouerwarts, and they are three, that is, 2. Rifts or fissures called Schidacidon, 3. broken in many small pieces, named Alphitidon,	Luxatio with a woud. Luxation with dolor.	Luxation with hard- neſſe.
Euerie frac- ture of the bone is ei- ther	Compound and ioyned with it both.	Perfect.	1. Cauledon, 2. Raphanidō 3. Styedon,	Stalkes of heartys when as the bones are bro-ken like Radish, Cucumbers,	
			4. Sicknes as a frac- ture with inflammation Erysipelas, intoperatnes &c.	A Wound. Gangrena. Intoperatnes &c.	Albusasis nameth other dif- ferences of Fractures : as a frac- ture of the iawes, a fracture of the nose, a fracture in Cranio, a fracture of the spine of the backe, a fracture of the fosiles, &c. Which be no true differen- ces of fractures, but rather no- teth the part affected,
Euerie frac- ture of the bone is ei- ther	Accidēt Itching: as a frac- ture with dolour, &c.				

A Table containing the differences of fractured bones.

Place this Table in folio. 25.	Simple frac- ture of the bone , of which there are iii. kihs, that is,	1. ouerwarts, and they are three, that is, 2. Rifts or fissures called Schidacidon, 3. broken in many small pieces, named Alphitidon,	1. Cauledon, 2. Raphanidō 3. Styedon,		
			when as the bones are bro-ken like Radish, Cucumbers,		
Euerie frac- ture of the bone is ei- ther	Compound and ioyned with it both.	4. Sicknes as a frac- ture with inflammation Erysipelas, intoperatnes &c.	Sicknes as a frac- ture with inflammation Erysipelas, intoperatnes &c.	A Wound. Gangrena. Intoperatnes &c.	Albusasis nameth other dif- ferences of Fractures : as a frac- ture of the iawes, a fracture of the nose, a fracture in Cranio, a fracture of the spine of the backe, a fracture of the fosiles, &c. Which be no true differen- ces of fractures, but rather no- teth the part affected,
Euerie frac- ture of the bone is ei- ther	Accidēt Itching: as a frac- ture with dolour, &c.				

GALE'S CLASSIFICATION OF DISLOCATIONS AND FRACTURES.
FROM CERTAINE WORKES OF SURGERIE, ETC.



Certaine Workes of Chirurgerie

By Thomas Gale

UNDER the above title the results of Gale's life work appeared in 1586. In the same volume is included also Gale's translation of the works of John De Vigo for whom he apparently had great admiration, though in his work he speaks also of other older physicians and is one of the few authors who gives due credit to Jerome of Brunswick. Gale's works appeared first as lesser publications in 1563, two years after his return from the campaigns with Henry the Eighth and Phillip the Second of Spain. Coming as they did only a few years after the publication of Paré's work it is interesting to note that both Paré and Gale had come to approximately the same conclusions regarding the treatment of wounds and particularly to the belief that in infected gunshot wounds gun powder was not the etiological factor. Gale does not mention Paré though he does mention many of the older authors. It is interesting to speculate whether three great surgeons of this time, Paré of France, Gale of England, and Dalla Croce of Italy, each serving in the wars, met and evolved the ideas which they promulgated or each came to the same conclusions independently.

Thomas Gale was born in London in 1507. He studied under Richard Ferris and John Field, two of the greatest of the English surgeons of the time, and the latter he makes one of the speakers in his work entitled "An Institution of a Chirurgeon." After practicing in London and gaining considerable reputation he entered the army of Henry the Eighth and served in the Battle of Montreuil in 1544. Later he entered the army of Phillip II of Spain and went through the Siege of St. Quentin in 1557. He thus had experience in military surgery for approximately fifteen years, before he returned to London and re-entered private practice in 1559. He evidently believed in practicing what he preached and following the advice of his elders for he says in his "Institution," "Also as touching Education, Hippocrates in his Booke called De Medico, would have a Chirurgeon follow the warres. For he speaking of the other parts of Phisicke saith. Next is the Chirurgerie of Wounds received in the warres, and extraction of darteres and thinges in them fired. For seldome civil and intestine divisions chaunce in all times, yet in externe and outward warres, these chau(n)ce most commonly. Wherefore he that will use this Chirurgerie, it behoveth him to frequent the Warres, & follow outward armies, and hostes of men. For so that he be exercised for that necessitie and use."

According to the introduction, Gale had written the "Institution" and "Enchiridion," or at least started them, when he was called away to the wars. He writes, "Wherefore I dyd set pen to paper, and wrote an Enchiridion of Chirurgerie, conteining the methode and way to cure wounds, both in similar & instrumentall parts, and eke fractures and luxations, with a new way of stanching flux of bloud, without cauterising yrons, by a poulder designed by maister Pierpont and, mee, when as

any member is taken off from the bodie, & is now in the Hospitals of London, used to the great comfort of the sicke people, & safegard of their lives where commonly before they perished & decayed: and while I thought here to have staid, behold, wars followed, and controversie arose, whether the cure of wou(n)ds made with com(m)on gonpouder and shot, were like to invenomed wou(n)ds, or else wounds contused, which controvercie to decide, I thought for the tyme necessarie, and have compiled a little volume, confuting the adversaries opinions, & establishing myne owne."

These two points, the doing away with the cautery and the care of gunshot wounds are, with the exception of his classifications, Gale's most important contributions to the surgery of the time. His classifications or rather graphic tabulations of Tumours against Nature, Wounds, Ulcers, Fractures and Dislocations are most interesting, and differ in their method of presentation from anything that had been published previously. Examination of the tables will show that the classifications are not only workable but also easily understood and remembered by the student.

The work is written for the laity as well as for the student of medicine and one of the impelling reasons for writing it was Gale's endeavor to raise the standard of surgeons, rather than of surgery. His list of the type of persons practicing surgery is anything but high class. "suche sorte of rude Emperickes yea Hosiers, Taylours, fletchers, Minstrales, Souters, Jogelers, Wiches, baudes, and to conclude (an infinite number whyche heretofore ware prohibited the exercise of thys arte) suche as other wyse cannot get annye lyvynge:"

He lays one cause of this to the fact that in order to study surgery it was necessary to know Latin, so, being an educated

man himself and able to read and translate Latin he busied himself with furnishing the works of some of the older surgeons translated into English in addition to his own original work. He published a Commentary on Guido de Cauliaco; An epitome of Galen de natural. facult.; Certain works of Galen called Methodus medendi, and Certain works of that famous Chirurgeon Maister John Vigo. Brunswick's work had already been translated into English so the student of surgery now had access to the great works of the French, German and Italian surgeons printed in his own language.

This great interest of Gale's in establishing surgery on a higher plane was apparently well known for one John Hall writes an introductory poem for one division of Gale's work. In part it runs—

"Chirurgerie whose perfect light all other Realmes do know,
Whose learned men with diligence, dooth make it shine and show,
In our coast hath not yet appeared, save in most obscure wise,
Through dusky cloudes of ignorance, that science doth despise,
But maugre now the malice great, of Momus and his sect,
A most cleere Gale doth blow awaie, those cloudes, and them
detect."

Gale became Master of the Barber Surgeons Company in 1561—and died in London in 1587.



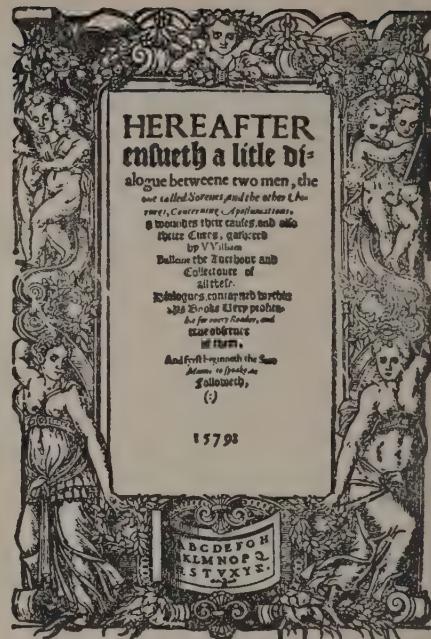
William Bullein's Bulwarke of Defense and Dialogue

WILLIAM Bullein was an English physician, botanist, and ecclesiastic of the middle of the sixteenth century to whose ill fortune we are indebted for a most interesting book. He was born on the island of Ely during the early part of the reign of Henry the Eighth and died in London in 1576. His early education was gained either at Oxford or Cambridge or possibly at both. Later he studied for the ministry and for four years held a rectorate in Suffolk. He practiced for a time in Durham and then moved to London where he attained considerable reputation.

In 1548 he published a book which was called "The Government of Health" which was reprinted ten years later. In this reprint he promised to publish another book in a year, referring to his "Bulwarke." This he wrote, but the copy was lost in a shipwreck. In the meantime William Hilton, a brother of Sir Thomas, the Baron of Hilton, to whom "The Government of Health" was dedicated, brought against Bullein the charge that he had murdered one of his patients. This kept Bullein under surveillance for a time, and then the accusation failing, Hilton



(A)



(B)

betweene Soarne, and Chirurgie. Fo. 3
F^toofeth that is most certayne, thereto let by hand the tyng wel, for
my past I wold haue to helpe my soarenes which you do to here
pastres before and behynde.

34.
(C)35.
(D)

A. TITLE PAGE OF THE "BULWARKE OF DEFENCE." B. TITLE OF THE SURGERY
C. & D. FRONT AND BACK VIEWS OF "SOARNES"

had him imprisoned for debt. He was also later found not guilty of this charge and freed. Bullein naïvely says in his introduction to the reader "And being thus in Pryson, me thought I had not onely convenient tyme, but also a quiet Conscience, to travel, in renuing my late Booke, or lost Copy, whych in deede, I am not able to finyshe, being prevented wyth so many Troubles, and Lets of my sayd Enemy, whose doings at large, I commit to sylence, least I should seeme to wryte, a Story of Tragedy, or els a description of hys folly, in the place of Phisicke: no lesse also can I, but declare some cause of my let, and why my Booke came not forth ere thys tyme, according as I had promysed. But blame mee not, good Reader, although I put hym in my Booke, whych would have put me from thys Lyfe. And thys Booke whych I have done, Gentle Reader, take it in good part, I pray you, for that is my desyre."

After this long wait the *Bulwarke* finally appeared in 1562 and was reprinted in 1579 bearing the title: "Bulleins Bulwarke of Defense against all Sicknesse, Soarnesse, and Woundes that do dayly assaulte mankinde: which Bulwarke is kept with Hilarius the Gardener, & Health the Phisicion, with the Chirurgeon, to helpe the wounded Souldiours. Gathered and practised from the most worthy learned, both olde and new: to the great comfort of Mankinde: by William Bullein, Doctor of Physicke 1562. Imprinted at London by Thomas Marshe, dwellinge in Fleetestreate near unto Saincte Dunstanes Church. 1579." As the illustration shows, a fine woodcut border surrounds the title and makes a rather good title page though from the stand-point of typography it mixes up about every font of type there could be in the establishment.

The first part of the book deals with medical matters and a special part of the volume is devoted to Surgery. The lay

literature of this period and the following century or more, frequently employed dialogue as the method of expression of ideas; at once one thinks of piscator and viator of the beloved "angler" and Bullein borrows this method in this work and does it well. He says: "Hereafter ensueth a little dialogue betweene two men, the one called Sorenes, and the other Chirurgi, Concerning Apostumations, & woundes their causes, and also theire Cures, gathered by William Bulleine the Aucthour and Collectoure of all these Dialogues contayned wythin this Booke Very profitable for every Reader, and true observer of them. And fyrst beginneth the Sore mann, to speake, as followeth, 1579."

The sick man and the surgeon then carry on a conversation regarding various surgical conditions, principally inflammatory diseases of different forms and the treatment of wounds. In the first part of the dialogue the surgeon tells the sick man what surgery is and what the surgeon should be. It contains a dia-tribe against untrained and irregular practitioners. Some of these he characterizes "like as the swarmes of vagabound Egyptians." And says they travel from town to town "with a box of Salve, and cases of tooles" and when they can get nothing else: "Then fall they to Palmestry, and telling of furtunes, dayly deceiving the symple." He speaks also of soft surgeons and says "You say the truth. Even so, soft chirurgians make foule soares, sweete woordes are pleasant to Women and yonge Children: but playne true tales, oughte to bee amonge men of knowledge, without curious Cyrcumstau(n)ce, or Rhetoricall coloures." He defines surgery as an art rather than a science and divides it into two parts, the first "Theorica" and the second, dependent on the first, "Practica."

Bullein's characterization of the requirements of a surgeon is so good that it is worth repeating: "Eight things or propertyes

of a good Chirurgian. He must begin first in youth with good learning, and exercise in thys noble arte, he also must be clenly, nimble handed, sharpe sighted, pregnant witted, bolde spirited, clenly apparayled, pytefull harted, but not womanly affectionated to weepe or trimble, when he seeeth broken Bones, or blouddy Woundes, neyther must hee gieve place to the cry of hys soare Pacient, for soft Chirurgians maketh fowle soares. Of the other syde, he may not play the partes of a Butcher to cut, rend, or teare the body of man kinde. For although it be frayle, soare, and weake, yet it is the pleasure of God, to call it hys Temple, hys Instrument, and dwelling place, and the Philosopher doth call it Orbiculus, that is, a little world.' He ends the paragraph with the quotation from Galen which is as true today as it was in Galen's time. "That is, nature is ye worker, the Physicion is but his minister. Therefore the Chirurgicall Physicion, is Natures Servaunt."

Bullein's surgical teaching differs little from that of his contemporaries. Nor does he add anything new either in diagnosis or technique. He did, however, call attention to an important piece of surgical technique which, though previously known, had been forgotten and fallen by the wayside. This was the necessity of opening abscesses at their most dependent part in order that drainage might be aided by gravity. He advocates wide half-moon incisions to secure adequate drainage.

THE Historie of Man , suc-

ked from the sappe of the most approued
Anathomistes , in this present age , compiled
in most compendious fourme , and now published in
English , for the vtilitie of all godly Chirurgians ,
within this Realme , by *John Banister* , Master
in Chirurgerie , and Practitioner
in Philicke .



Ter. And.

*Si illum objurget , vite qui auxilium tulit ,
Quid facias illi , qui dederit damnum aut malum ?*

If that for him that aydes thy lyfe , thou chidynges vp doest lay ?
What canst thou do to him that hurtes or seeketh thy decay ?



AT LONDON ,
Printed by Iohn Daye , dwellyng
ouer Aldersgate .

Anno. 1578.

 *Cum gratia & Privilegio Regie Majestatis.*



Banister's Anatomy

THE dawn of surgery in England may fairly be said to begin with the Elizabethan period. Henry the Eighth was gone and though he had done great things for surgery at the request of Vicary, his reign had been marked by a feeling of national unrest which in large measure passed on with him. Wolsey, the great cardinal, had died, almost in disgrace, in 1530 and times were ripe for a change to a little quietude. Ten years later, in 1540, John Banister was born, just where is not known. Where he began his studies is also obscure and the first definite knowledge of him is when he accompanied the soldiers of the Earl of Warwick into France as a surgeon. On this expedition he met William Clowes, later also to become a well known surgeon, and a friendship began which lasted throughout life. At this time he was evidently not regularly graduated for he subsequently took a Bachelor's degree at Oxford and obtained his license to practice medicine. He first settled in Nottingham, the country of Robin Hood and Friar Tuck, where he practiced for several years until the wanderlust again called him and he served on ship for the Earl of Leicester

in his expedition to the Netherlands. On his return in 1588 he settled in London and renewed his friendship with Clowes becoming closely associated with him. He soon gained a most enviable position in London and was apparently well thought of at Court for he received the royal permission to practice internal medicine in addition to surgery. He was proud of this for he mentions himself as both "Master in Chirurgerie, and Practitioner in Physicke."

His period of writing began before his permanent removal to London. In 1575 he published his monograph on ulcers which he entitled "A needful, new and necessarie treatise of chyrurgery, briefly comprehending the general and particular curation of ulcers, drawen foorth of sundrie worthy wryters, but especially of Antonius Calmeteus Vergesatus, and Joannes Tagaltius. Hereunto is annexed certaine experiments of mine own invention, truly tried, and daily of me practiced." As shown by the title it was mainly a compilation and Banister was principally a compiler and editor, though occasionally his notes and emendations show considerable originality. Later he published a translation of the work of Wecker and also a surgical antidotary.

From his experience Banister believed that the great fault among the surgeons in England was ignorance of anatomy, for in his introduction he says: "At last I called to remembrance, that the greatest want that reigneth in Chirurgians at this day, is ignoraunce in the subject of their worke, wayng also on the other side, that no English Author, which hitherto hath written, hath sufficiently applyed his tyme to the amendment thereof. Then was I wholly overcome in this purpose, and then did I clearely see, how that to write methodes or meanes to cure the affected partes of the body, the partes themselves beyng altogether unknownen, or falsely imagined of, might rather be a

meane to indurate the cataract of inscience then to eate it through, or take it away"—So he set himself to compile his anatomy which he calls "The Historie of Man, sucked from the sappe of the most approved Anathomistes, in this present age, compiled in most compendious fourme, and now published in English, for the utilitie of all godly Chirurgians, within this Realme, By John Banister, Master in Chirurgerie, and Practitioner in Phisicke. At London Printed by John Daye, dwellyng over Aldersgate, in the year 1578. With the grace and Permission of her royal Majesty."

The physician and surgeon of the sixteenth century seems to have been smarting under a sense of injustice of some sort and Banister shows this by the quotation from the Andria of Terence which he displays on the title page:

"If that for him that aydes thy lyfe, thou chidynges up doest lay?
What can thou do to him that hurtes or seekest thy decay?"

That this irritation was not confined to England alone is borne out by the epigram written by Euricius Cordus, professor of Medicine in Marburg during the early part of the sixteenth century:

"Tres medicus facies habet; unam quando rogatur
Angelicam: mox est, cum juvat ipse, Deus:
Post, ubi curato poscit sua praemia morbo,
Horridus apparat, terribilisque Sathan."

This has been very freely translated into the familiar quatrain,

"God and the doctor we alike adore
When on the brink of danger, not before,
The danger past both are alike requited,
God is forgotten, and the doctor slighted."

Though this gives the main idea another translation might be suggested:—

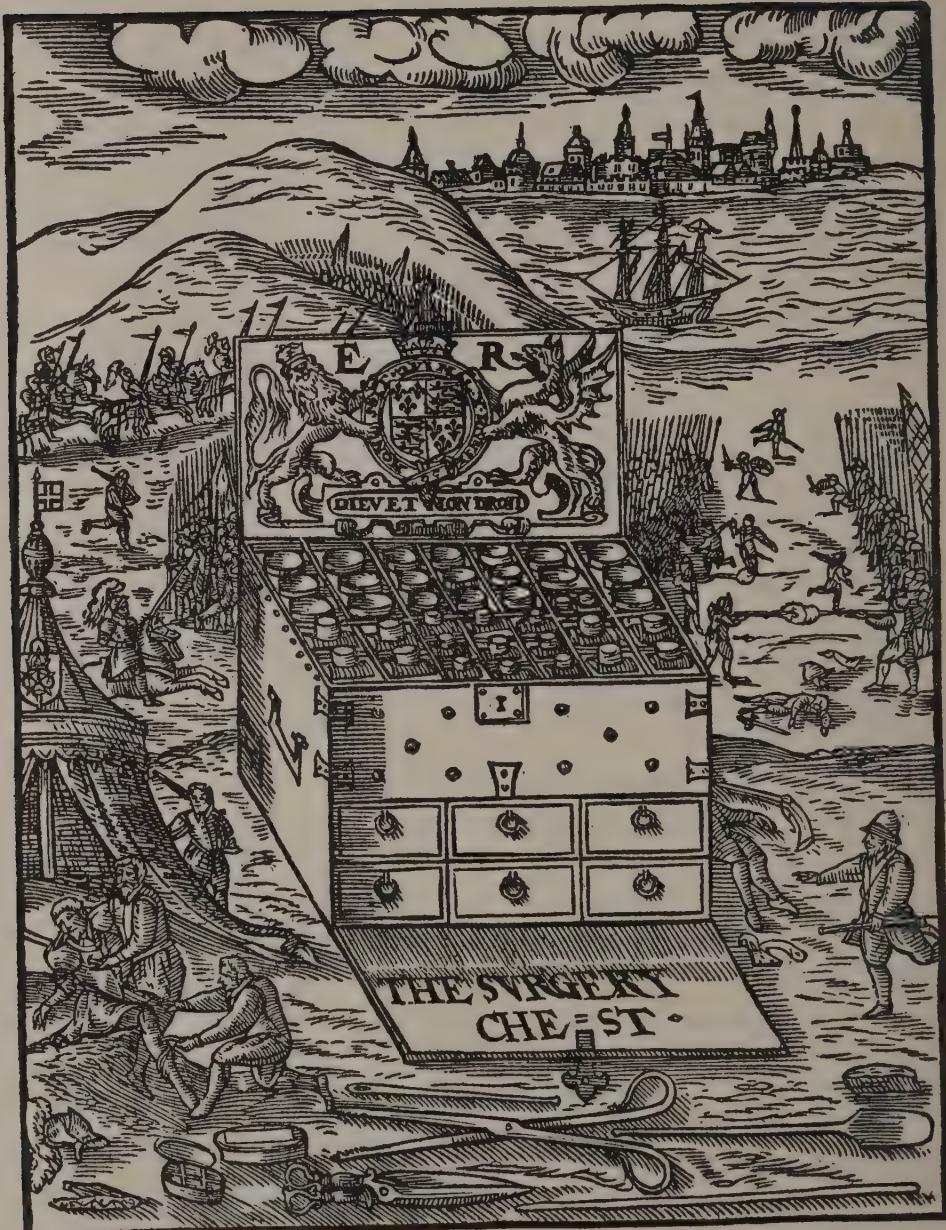
Three faces has the doctor, at first when he is called,
He seems to be an angel, and—when he helps—a god,
But later, after danger's passed; I'm well and freed from evil,
'Tis then—as he demands his fee—He looks just like a devil.

Banister's book, published in 1578, is a compilation of the then known anatomy and he tries to harmonize the differences of opinion existing between the famous anatomists. He bases the work principally on the anatomies of Galen, Vesalius, and Columbus and explains the differences in opinion along evolutionary lines, claiming that human bodies have changed with the years. To the anatomical descriptions, he adds the uses of the different parts of the body and the work might be classed as a physiology as well as an anatomy. There are but four illustrations and these are taken from Vesalius. This strikes one as rather strange as so many illustrations were at hand for him to use and as it was the first anatomy published in English it would have been more useful had it been more generously illustrated.

As a final preface to the work Banister publishes two letters of commendation—One in Latin, "Julius Borgarucius to his friend Banister," and the other in poetry, "William Clowes Chirurgian to his lovyng friend John Banister."

In the "Epistle to the Chirurgians" the author gives us a glimpse of the fact that all was not smooth sailing in medicine, then as now, for, after dedicating his book to all true surgeons, he goes on to say: "As for you, O ye chaffe of the earth, ye stinge of the Godly, ye Impes of Hell, and children of Wrath, you (I say) that, under pretence of the sacred Arte of Medicine, devoure the sheepe of Gods pasture, flea the laboures in his

harvest, and denye your Lord the fruites of the vineyard: . . . And I (in these my labours) from the depth of my hart renounce you, hopyng assuredly, that from none of the flowers of this Garden any of you shall take opportunitie to sucke that, whiche may maintaine the infection of your pestilent wretchednesse hereafter." Powerful language but undoubtedly heart-felt.



THE SURGERY CHEST FROM THE 1596 EDITION OF CLOWES' SURGERY



The Gunpowder Surgery of William Clowes

THE British Isles, during the sixteenth century, furnished their due quota of surgeons who aided in raising surgery from the low and almost menial position which it had held during the middle ages and in lifting it to a plane almost coequal with that of internal medicine. In 1512 the Company of Barber Surgeons of London procured a new charter from King Henry VIII which forbade the practice of surgery within the city of London and seven miles around it, to other than members of the Company. Scotland had preceded this by obtaining a charter for the Royal College of Surgeons of Edinburgh in 1505, the rules of which attempted to limit the practice of surgery to those duly qualified. By the middle of the century the limitation of practice of surgery was thus fairly established, and opportunity for surgical advancement was possible. At approximately this time, in 1540, William Clowes was born in Kingsbury, Warwickshire. As was then the custom, he learned surgery by practice under his master, one George Keble, in London, and when 23 years of age became an army surgeon and served in the campaign in France under the command of Earl

Ambrose, of Warwick. Here he had an excellent opportunity to study the surgery of war, for in the early part of the century, 1513-14, it had been decided that the surgeons should be considered "as Herawdes of Armes, as well in batelles and feldes as other places, ther for to stond unharnessed and unwapenned, according to the lawe of armes, because they be persones that never use feats of warre, nor ought to use, but onely the besynes and exercise of their science, to the helpe and comfort of the Kinges liege people in the tyme of their nede." Consequently the surgeon had only to treat the sick and wounded.

Clowes busied himself in the army for six years and on his return to London in 1569 was received into the "Barber Surgeons Company," which in 1540 by a formal act of Parliament had become incorporated with the "Fellowship of Surgeons." Thus he became a full fledged surgeon. He practiced then in London and must have attained considerable reputation for in 1557 he was appointed on the Staff of St. Bartholomew's Hospital as one of its three surgeons. In this same year he published his book on the cure of syphilis by inunctions. He became also surgeon to Christ's Hospital and apparently seemed settled in London.

The call of war surgery, however, was too strong and in 1585 he once more took service in the army of the Earl of Leicester. At the close of the campaign he again returned to London and in 1588 was made a Master of the Court of the Barber Surgeons Company. In this same year he published his most famous work which appeared first under the title "A prooved practise for all young chirurgians, concerning burnings with gunpowder, and woundes, made with gunshot, sword, halbard, pike, launce, or such other. London, 1588." Later the title was changed and in 1596 it appeared as "A Profitable and Necessarie Booke of observations, for all those that are burned

with the flame of Gun powder, &c. and also for curing of wounds made with Musket and Caliver shot, and other weapons of war commonly used at this day both by sea and land, as hereafter shall be declared: With an addition of most approoved remedies, gathered for the good and comfort of many, out of divers learned men both old and new Writers: Last of all is adioined a short Treatise, for the cure of Lues Venerea, by unctions and other approoved waies of curing, heretofore by me collected: and now againe newly corrected and augmented in the yeere of our Lorde 1596. By William Clowes one of hir maiesties Chirurgians. Imprinted at London by Edm. Bollifant, for Thomas Dawson. 1596." A still later edition of this amended work appeared thirty-three years after his death which occurred in 1604, carrying the same title with the exception that it states it is "The third Edition London Printed by M. Dawson, and are to be sold by Benjamin Allen and Peter Cole, 1637."

I have had the opportunity of examining these last two editions. They are identical even to pagination with the one exception that the 1596 edition has, on page 140, a cut of the Surgery Chest which is reproduced here, while the 1637 edition shows the more familiar table covered with instruments on the same page. In Dr. Harvey Cushing's copy of the 1637 edition is inserted a photograph of the title page of the *Surgery of John de Vigo 1586*, which bears William Clowes' signature.

Though he was already forty-eight years of age war claimed him once more, this time in the navy where he served in the fleet which defeated the Spanish Armada. This task accomplished he came back to London to practice and later retired to Plaiston in Essex where he died in 1604.

Clowes was a practical surgeon, consequently the greater portion of the surgery consists of a recital of case histories.

They are couched in simple clear English and give a detailed account of his treatment in each case. He had, of course, great faith in various ointments for dressings but he had also good judgment as to when to interfere and when to bide his time. Many of his methods were ingenious and some original. He was a well read man for he refers to the dicta of most of the well known writers of previous times and is most careful to give credit to them for ideas which he borrowed and technique that he used. In two cases of an abdominal wound with protruding omentum he used the ligature and removed the protruding omentum, though he confesses in the second case that he would rather have used the cautery. As an example of clever handling of a case, the fifth one cited, "The cure of a certaine souldier that was wounded with Gun shot in the Low countries:" is interesting. "he was shot in at the bottome of his belly on the left side, and the bullet passed through, and rested in the right buttock neere unto Anus, where it lay secretly hid, and could not bee found for the space of three years, in which time it became a Fistula of hard curation." The problem, therefore, resolved itself into one of finding and extracting the bullet. After ineffectual probing with all sorts of probes and tents Clowes thought of Tagault's statement that when he could not apply medication with probe and applicator he injected the sinus. In this case instead of using healing medicaments he injected an irritating solution and plugged the external opening to prevent its escape. The result was that a few hours later a painful swelling appeared on the right buttock which upon incision yielded up the bullet and recovery took place.

He closes his book, as do most surgeons of the time, with a plea for charity for his opinions.



Peter Lowe, A Discourse of the Whole Art of Chyrurgery

HIS work by Peter Lowe is one of the most delightful surgeries ever written. The man is so genuine and soul bound in what he has to tell that his personality dominates his every word and the reader feels as if he were listening to the author and is hearing a pleasant and interesting speaker rather than reading a book. Though Lowe had but little to offer that was new or original, he had had every opportunity of studying the methods of the time and knew how to classify his knowledge and what was still more valuable, possessed the ability to express himself in clear and pleasant style. Born in Scotland, probably in Errol, in 1550, he left there at an early age and received his education in Paris. The value of this early training and the soundness of the French method evidently greatly impressed him for, many years later, he used it to great advantage. After receiving his education he practised in France and Flanders for twenty-two years. He then passed through the war period of his education where he came in contact with the methods of Franco and Paré and absorbed the good of each. In 1589 and 1590 he was Surgeon Major to the

A
DISCOURSE
 OF THE VVHOLE ART
 OF
CHYRURGERY

VVherin is exactly set down the Definitions
 Causes, Accidents, Prognostications and Cures of
 all sorts of Diseases, both in generall and particular,
 which at any time heretofore have been practised
 by any Chyrgion, According to the opinion of
 all the ancient professors of that Science.

Which is not only profitable for Chyrgions, but
 also for all sorts of people; both for preventing of
 Sicknesse, and recovery of Health.

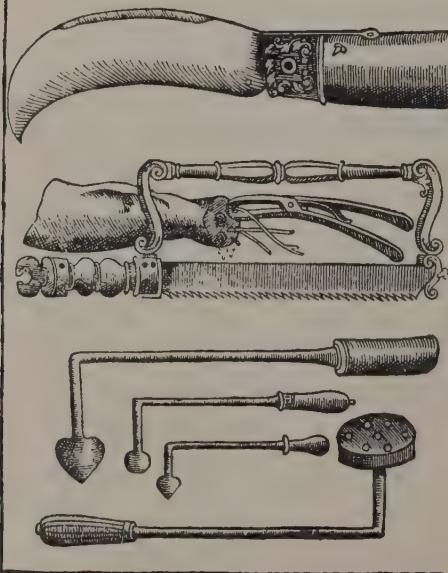
Compiled by PETER LOVVE Scottishman, Doctor in the
 faculty of Chyurgerie at Paris, and ordinary Chyrgion
 on to the French King and Navarre.

Whereunto is added the Rule of making Remedies which
 Chyrgions doe commonly use, with the Presages
 of Divine Hippocrates.

The fourth Edition; corrected, and much amended.

LONDON, Printed by R. Hodgkinsonne, 1654.

Instruments, and Cutters actuales, for extirpation.



THE
PRESAGES
 OF
 Divine Hippocrates.

Divided into three parts. VVith the
 Protestation or Oath which Hippocrates
 caused his Schollars to make at their
 entry with him to their Studies.

The Whole Collected and Translated
 by Peter Lowe Scottish-man,
 Doctor in the Facultie of
 Chyurgery in Paris.

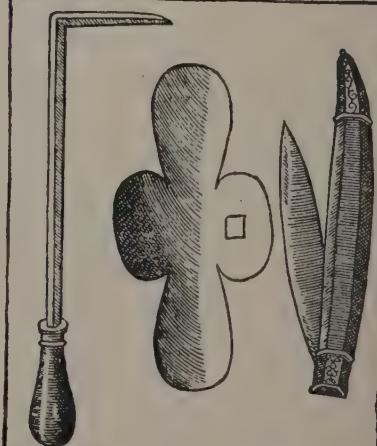


LONDON,
 Printed by R. Hodgkinsonne
 An. Dom. 1655.

Of Ranunculus. LIB. V. 205

which is thus done, first place the sick communly, then
 cause one to stand before him, and one of his hands upon his
 forehead, the other on his chin to hold it down, and open
 the mouth, then the Chyrgion shall open the veines under
 the tongue with a Lanice, next open the tuncz, either by
 bistrie or canter assault. And

*Instruments to cauterize and open
 the ranula under the tongue.*



Spanish Regiments at Paris and then as he says "next following the French King (Henry IV) my master in the warrs 6 yeers, where I took commoditie to practise all points and operations of Chyrurgery. Upon which occasion I endeavoured my self to collect my practises at vacant hours, into this Book, according to the opinion of the ancient and learned practitioners, in Physick and Chyrurgerie, in such plain terms as I could, for the use of the common sort: which now I doe offer to thee newly corrected and enlarged for thy greater comfort."

The work under the title "A Discourse of the Whole Art of Chyrurgery" etc. was first published in 1596, when he had returned to London where he remained until 1598. A new edition appeared in 1597, but with the title reading "The Whole Course of Surgerie," etc. He then republished the book in 1612 writing a new dedication, epistle to the reader, and letter to Gilbert Primrose and James Harvie. After the author's death the work was reprinted twice, the final edition appearing in 1654 as the fourth edition under the original title though in fact the book had already appeared four times. The title reads: "A Discourse of the Whole Art of Chyrurgery wherein is exactly set down the Definitions, Causes, Accidents, Prognostications and Cures of all sorts of Diseases, both in general and particular, which at any time heretofore have been practiced by any Chyrurgion, According to the opinion of all the ancient professors of that science which is not only profitable for Chyrurgions, but also for all sorts of people; both for preventing of Sicknesse, and recovery of Health. Compiled by Peter Lowe, Scottishman, Doctor in the faculty of Chyrurgerie at Paris, and ordinary Chyrurgion to the French King and Navarre. Whereunto is added the Rule of making Remedies which Chyrurgions doe commonly use, with the Presages of

Divine Hippocrates. The fourth Edition, corrected, and much amended—London, Printed by R. Hodgkinsonne, 1654." The work thus had a life of 58 years.

While in France, Lowe was appointed doctor in the faculty of surgery at Paris and ordinary surgeon to the French King and Navarre. In 1598 he returned to Glasgow and there took up the cudgels for medical education and licensure. Clowes and Banister had preceded him by a few years and the question of putting down the quacks and itinerant surgeons was a very live one in the British Isles. In his letter of 1612 to Primrose and Harvie, Lowe takes this up and only space prevents me from quoting his remarks in full. They are so well worth while. He divides the quacks into eight or nine different classifications and then goes on to describe the various types. The upshot of the matter was that in 1599 "The matter being considered, and the abuse weighed by his Majestie and Honourable Councell, thought not to be tolerated, for the which I got a priviledge under his Highness privie seal, to try and examine all Men upon the Art of Chyrurgerie, to discharge, and allow in the West parts of Scotland, who were worthy, or unworthy to profess the same." He also received from King James IV the royal privilege to found a school of medicine based on the pattern of Parisian medical education and in 1599 as the result of this the Faculty of Physicians and Surgeons of Glasgow came into being. The date of his death is given as late in 1612 or early 1613. His introduction and letter are dated December 20, 1612, which must have been very shortly before his demise.

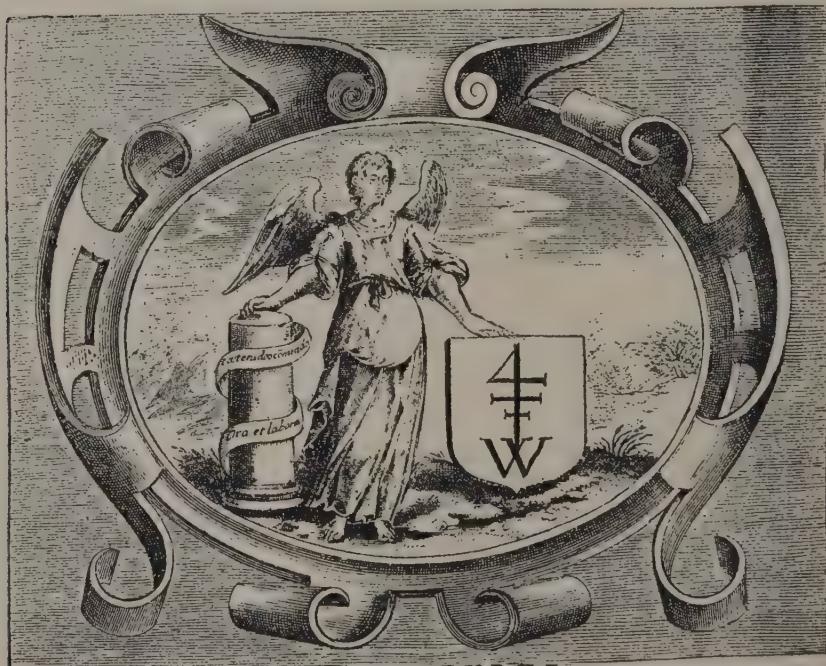
Lowe's book follows the stereotyped outline of books of the day and in part is written in question and answer form, Peter, the father, acting as interlocutor and John, his son, answering the questions. One of the most interesting things in the book

is his clear concise description of an amputation; one can almost see the operation going on. He makes a distinction between clean and infected amputations in so far as haemostasis is concerned; in clean he used the ligature, in infected, the actual cautery. He also strongly urges that it is better to cut into uninfected tissue and possibly sacrifice some good tissue than try to cleave too close to the line and run the risk of later spread of infection. He scrapes away the periosteum and performs an aperiosteal amputation.

Appended to the 1654 edition is Lowe's translation of Hippocrates which appears under the title "The Presages of Divine Hippocrates. Divided into three parts. With the Protestation or Oath which Hippocrates caused his Schollars to make at their entry with him to their Studies. The Whole Collected and Translated by Peter Lowe, Scottishman, Doctor in the Facultie of Chyrurgery in Paris. London, Printed by R. Hodgkinsonne, An. Dom. 1655." It will be noted that although appearing in the same binding, the book on Hippocrates is dated 1655 while the surgery bears the date of 1654. The presages or prognostications are preceded first by a dedication, dated 1611, then follows Lowe's translation of the Hippocratic oath, fuller and in some ways more interesting than the version in common use today, and finally a short life of Hippocrates. The work was evidently intended for use by the students in the newly founded medical school in Glasgow.

EXERCITATIO,
ANATOMICA DE
MOTU CORDIS ET SAN-
GINIS IN ANIMALI-
BVS,

GVLIELMI HARVEI ANGLI,
Medici Regii, & Professoris Anatomie in Col-
legio Medicorum Londinensi.



FRANCOFVRTI,
Sumptibus GVLIELMI FITZERI.

ANNO M. DC. XXVIII.

TITLE PAGE OF HARVEY'S "DE MOTU CORDIS"



Harvey's Circulation of the Blood

THOUGH truly not a surgical work, the description of the movement of the heart and the circulation of the blood had such a profound effect upon surgical practice that it well deserves to be called a masterpiece in surgery. Like the majority of great intellectual triumphs it was the culmination of years of effort by many men and to Harvey fell the lot of piecing together the fragments and making of them a concrete whole.

From the time of the origin of medicine there had been great curiosity as to the content of the arteries and veins and Galen had shown that, contrary to the theory of Aristotle, the arteries as well as the veins contained blood. The great anatomists of the sixteenth century made a little progress in the physiology of the circulation. Sylvius described the valves of the veins. Vesalius established the fact that there were no visible communications between the right and left ventricles, though he did not deny the presence of invisible pores. Servetus concluded from his studies that there were communications in the lungs between the pulmonary arteries and veins and published this

fact in his *Christianismi Restitutio* in 1553, thus establishing his right as one of the forerunners of Harvey in the discovery of the circulation. In 1555 Realodus Columbus published his description of the pulmonary circulation and in so doing almost solved the problem. Fallopius worked on the description of the valves of the veins but progressed but little. Up to this time the discussion had been largely philosophical with theoretical reasoning based on anatomical observation in the dead subject and a different method was required to solve the problem. This was supplied by that close observer of comparative anatomy, embryology, and experiment on the living animal, Fabricius of Aquapendenti. His anatomical description of the valves of the veins was the most perfect up to the time for he carried the work of his master, Fallopius, to its conclusion.

William Harvey, an Englishman, born at Folkestone in 1578 received his bachelor's degree from Cambridge in 1597 and shortly after went to Padua to study medicine. This brought him under the instruction of Fabricius and his assistant Casserius, and from them apparently he learned the scientific methods upon which he founded the conclusions for his great discovery for he applies, and correctly applies, anatomy, embryology, comparative anatomy, and experimental physiology to reach these conclusions. If any fault is to be found with Harvey's work, it is that he fails to give credit to his teacher Fabricius for the method, at least, by which he arrived at his conclusions. After graduating from Padua, Harvey returned to England and took up practice, becoming a fellow of the Royal College of Physicians in 1607. He first brought forward his views of the circulation in 1616 and after demonstrating his experiments and delivering his lectures many times, his book was published at Frankfurt in 1628 under the title "*Exercitatio Anatomica de*

Motu Cordis et Sanguinis in Animalibus etc." The Anatomical Dissertation concerning the Motion of the Heart and Blood in Animals, of William Harvey of England, Physician to the King, and Professor of Anatomy in the College of Medicine of London. At Frankfort, at the expense of William Fitzerus in the year 1628.

The work is a masterpiece of sound deductive reasoning based upon scientific experimentation. He first describes the musculature and valves of the heart and the heart beat and says: "I began to think whether there might not be a movement, as it were, in a circle. Now this I afterward found to be true; and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large, and its several parts, in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins and along the vena cava, and so round to the left ventricle in the manner already indicated."¹

Following this statement he goes on to prove his contention. One of his most interesting experiments is that on the live snake in which, when the vena cava is grasped with forceps, the part between forceps and heart becomes empty and the heart pale, but immediately upon release of the obstruction the color and size of the heart are restored. Conversely he describes what happens when the aorta is compressed. He ends the description by saying: "Here, then, we have evidence of two kinds of death: extinction from deficiency and suffocation from excess. Examples of both have now been set before you, and you have had opportunity of viewing the truth contended for with your own eyes in the heart."

¹Translations are from the memorial volume published by G. Moreton, 1894.

The function of the valves of the veins he describes clearly and demonstrates scientifically. The exact pathways by which the blood passes from artery to vein he did not know as they could not be seen because of the limitation of the lenses of the period and it remained for Marcello Malpighi to add this final proof to Harvey's contention by the direct observation of the blood corpuscles passing from one set of vessels to the other. This demonstration was made possible by the newly invented high power microscope and took place in 1661, four years after Harvey's death.



John Moyle

An

Abstract of Sea Surgery

IN 1686 a little volume entitled "Abstractum Chirurgiae Marinae" (an abstract of Sea Surgery) was printed in London by J. Richardson for Thomas Passinger at the 3 Bibles on London Bridge after Licence had been obtained by Robert Midgley on May 25th. It was written by one John Moyle, Sen., who on the title page describes himself as "sometime a Sea Chirurgeon in His Majesties Service." Of Moyle, I can find little record except that in his later years he lived at Westminster on his pension and died in February 1713 leaving a widow, one son, and two daughters. We must, therefore, depend on his short introduction in which he informs us that at this time (1686) he was somewhat advanced in years and had served actively. There is also a somewhat pathetic note in this introduction where he speaks of being out of employment, but it may be well to quote his own words to the Surgeon General of the Navy and the Masters, or Governours of Chirurgeons-Hall, London.

"It is not unknown to some of you, if not to all, that by your appointment I have had the Honour to be a Sea Chirurgeon (for

Abstractum Chirurgiae Marinaræ.

~~Ab~~ John B. John DD
An ABSTRACT of
SEA CHIRURGERY:

Designed for the use of such Chirurgeons who desire to serve at Sea, yet are unacquainted with Sea practice: In order to their restoring to Health of Sick or Wounded Sea-men; But may all fitly serve for most Chirurgeons.

In Three Compendious Books.

The First containeth certain Directions necessary to be observed by the Sea-Chirurgeon in his fitting out.

The Second teacheth how he should perform his Chirurgical Duty being at Sea, both in an engagement, and at other times.

The Third instructeth how he must execute the Physical office imposed on him.

By JOHN MOYLE Sen. sometime a Sea-Chirurgeon in His Majedies Service.

Licensed, May 25th. 1686. ROB. MIDGLEY.

London, Printed by J. Richardson for Tho. Paffinger,
at the 3 Bibles on London-Bridge. 1686.

not a few years) in His Majesties Service; and now I find myself in years, and cannot expect to hold it much longer at Sea; which turbulent Element requires the best of a Mans Age in whatso-ever Capacity he comes there to serve. But before my Exit I resolved to write this Abstract, according to what Skill and Experience I have attained for the use of others of my Calling, who are the true Sons of Esculapius, and either are, or would be Sea-Chirurgeons, yet whose younger years, or non opportunities have not permitted them to aim at that degree of Experience, as is requisite; but are either altogether unacquainted with the Sea Practice, or at least waies have not been in Ingagements, and so need Instruction. I undertake this, not that I think better of myself than of all other Sea-Chirurgeons; for there are some who were my contemporaries in the Wars, and their Knowledge I esteem as good, and some better than my own: But I undertake to write this, because I see others have not: And indeed being at present out of Employ, I have more leisure time than others, or then my self desires, If I could remedy it: However at this juncture it falls out opportunely to me to write it, and especially for some reasons urging. Now as I have had at all times my Implyments from Your Worshipful Company, so I humbly Dedicate this Book unto you." etc. From this, one gets a vision of an old broken down man, no longer able to follow the sea as a surgeon, who must step out of the picture, and allow his place to be taken by a younger man, trying to aid the young man suitably to fill his place. There was probably also the matter of money and self support for he speaks of his non-employment and later adds he wrote it "especially for some reasons urging," which might have been financial.

The book breathes the sea from cover to cover. At first the fitting out of the sea chest and choosing the proper medicines

and dressings according to the type and length of voyage and the destination of the ship. There is nothing of civil surgery; for the author says: "I do not design here to teach you to be a Chirurgeon, but will suppose you to be one already: But I intend to teach you to be a Sea Chirurgeon, for by that time you have read this Book, you will find that a man may be an Ingenious Practitioner at Land; and yet, if he comes to Sea, be far to seek, being unacquainted with the Sea Practice: Nay, You may have been at Sea, and yet (if not in a Sea-fight) you will be to seek, not knowing how to behave yourself at such a time." So in the second part the author takes us into action. We are in a Man-of-War and are taught how to prepare the platform below decks and get our material ready at hand. Our operating space is lighted by candles and everything in readiness when "By this time I'll suppose the fight is begun, and your ship is ingaged, and wounded men begin to be brought down: And first one, who to save his life, must have his Limbs amputated." Later minor injuries are described, each one minutely, even to the dressings and ointments to be used. Through it all, so vivid are the descriptions that one can sense the action and almost feel the ships come together and the grappling irons take hold, followed by the boarding and hand to hand fighting. The mind carries us back nearly three centuries and we seem to feel ourselves in a ship attacking the Armada with Drake, Raleigh, or Essex in Command and participating in the later campaigns (in which Moyle probably took part) which were to result in making Britannia ruler of the seas.

But the actual surgery is disappointing in its crudity. The lessons of Paré are apparently forgotten if they had ever been known by the author. The ligature is not mentioned, and the cautery and pressure are used in its place. Circular amputation

is advocated and the necessity of removal of foreign bodies is stressed. Again as so frequently found in the surgeries of this time, water and constant washing of wounds are consistently employed, which probably accounts in part at least for the good results.

A book of this type is of great value in that it gives us of the present day a realization, if that is possible, of the actual practice of the period as it was carried out by the average or little better than average hit or miss surgeon. If one studies only the high lights in the form of volumes by the leaders of the surgical profession during any given period, the shadows are not seen, even by contrast, and the half tones are subconsciously recognized only as a blurred image which makes no impression. When, however, one reads a little book like this, the high lights do not dominate the picture and the half tones appear only in contrast to the shadows which stand out in all their crudity and ugliness. One is forced to the conclusion that the surgery of the seventeenth century, in England at least, represents a retrogression from the standards of the century before and we look forward eagerly from our vantage point of knowing the outcome, to the eighteenth century when a champion in the guise of John Hunter is to come to the rescue of a struggling and failing science.

5^o

Novum Lumen Chirurgicum:
OR, A
NEW LIGHT
O F
CHIRURGERY.

Wherein is Discovered, a much more
Safe and Speedy way of Curing
WOUNDS, than hath hereto-
fore been usually Practiced.

*Illustrated with several Experiments made
this Year in Flanders.*

Authore
JOHAN. COLBATCH, Med.

LONDON,
Printed for D. Brown, at the Blb. and
Swan without Temple-Bar, 1695.

TITLE PAGE OF THE NEW LIGHT OF SURGERY



Johan Colbatch's New Light of Surgery

QUACKERY and charlatanism ever present though they are in all lines of endeavor, seem nevertheless to have singled out medicine as the object of their greatest attack. The fact that the structure and functions of the human body lie in a realm unexplored by the average layman lends to them an element of mystery which leads, even among the intelligent, to a credulity which in any other field of activity would be looked on as inane. This has gradually bred in the medical mind a defense reaction which shows itself as suspicion in its mildest, and disbelief, if not total disregard to anything new, in its more developed form. Though this defense reaction has led to delay in the acceptance of many of the great discoveries in medical science, still it has been a saving grace; for innumerable ideas, evolved from thin air and unproven from the standpoint of experiment or clinical fact have fallen by the wayside without ever having had the opportunity to do any definite harm. This has led to the unwritten dictum that before any idea, especially in the therapeutic side of medicine, can gain a foothold the fundamentals upon which it is based must be

Novum Lumen Chirurgicum
Vindicatum:
OR, THE
NEW LIGHT
OF
CHIRURGERY
VINDICATED

From the many unjust Aspersions of
some unknown Calumniators.
With the Addition of some few
Experiments made this Winter In
England

By Jo. Colbatch, *Physitian.*

L O N D O N:
Printed for D. Brown, at the Bible and
Swan without Temple-Bar. 1695.

TITLE PAGE OF THE VINDICATION

published freely and the entire story laid openly before the profession as a whole. Economically, of course, this seems unjust when compared to the commercial benefit gained by similar discoveries in other fields of endeavor but one must remember that medicine and surgery were not established, and should not now exist, on a commercial basis. Nevertheless, from time to time attempts to commercialize a discovery in medicine have been made but without success, for a trial shows that the material or method does not prove up to standard. The reason for this failure is self-evident, for the promulgator of a new idea who chooses a method of promotion that is contrary to the standards of his profession is generally of such low grade that the product of his endeavor is worthless.

On the other hand there are examples in medicine and surgery of men who in the beginning of their careers; classed with the unintelligent if not with the charlatans, have by constant and unfailing effort forced the regular profession to recognize their work as sound and finally to accept them in the fold. Johan Colbatch belonged in this class. He was not a graduate physician but an English apothecary who believed he had discovered an infallible remedy for healing wounds, which was made up of two parts, a so called vulnerary powder and a tincture to be taken internally. He explains the origin of his idea as follows: "Having for a long time been much dissatisfyed with the common methods of Chirurgeons, in the cure of Recent Wounds; and almost every Day, observing the inconveniences that attended those People who had occasion to make use of them; therefore for my own satisfaction, and Mankind's good, I took into Consideration, whether their Methods were agreeable to Reason, and the subject upon which they wrought. At last I was fully satisfied, that their Practice was most unreasonable, which I

shall endeavor to evince, with as much brevity and accuracy, as the unsettledness of my present condition will admit of: Which when I have done, I shall lay down my own Hypothesis; which I doubt not to confirm both by Reason and matter of fact; which is the most clear sort of demonstration." Apparently having made up his mind that surgical results were not all they should be, he began to concoct various medicines to answer his hypothetical requirements of proper physiological action. He was then ready to test them out and did so by animal experimentation, for in his introduction to the reader he says: "Having at length lighted upon a pair of medicines, the one Internal, and the other External, which I supposed would answer my Intentions; I began to make Experiments upon Dogs and other Animals. Wounding them in the most desperate manner I could contrive; and in about a Hundred Experiments that I made, I had not above five that miscarried." Then he introduced the usual cry of the individual who, whether rightly or not, believes himself persecuted—"three of which were made before the Right Honourable the Lord Cut's; but two of these three, as I can plainly make appear, after the danger was over, were Poysoned. I was likewise much abus'd in a Soldier of his Lordship's Regiment, whom after my Medicines had set him free from all ill Symptoms, and he almost well, in my absence for four or five Hours, (having before for five Days and Nights, been constantly with him, for fear of Roguery,) was made Drunk, but by whom I know not, and in an hour or two after my return he Dyed."

Following these experiments Colbatch made a large supply of his medicines and on his own initiative started for the wars in Flanders, where he was allowed to try his experiments with, according to his statement, great success. He was continually

at variance with the regular surgeons. His results were scoffed at and his medicines called caustic and harmful. But in the end he won to the extent that he was elected a member of the College of Physicians and himself became a regular.

What his medicines were he does not tell and excuses this secrecy by referring to Helmont's Mercurius Diaphoreticus, Willis's Preparation of Steel, and Tincture of Sulphur, and Needham's Panacea. His secret died with him and we must form our own judgment as to whether his medicines, or his careful washing of the wounds and avoidance of irritants were responsible for the good results that he publishes.

Colbatch's second series of experiments were apparently satisfactory to him, for at their conclusion he adds a new part to his volume which he considers worthy of a separate title page. In the first title he is a little modest saying only "Wherein is discovered, a much more Safe and Speedy way of Curing Wounds, than hath heretofore been usually Practiced," but in the second any modesty real or assumed, is thrown to the winds and the song of exultation pours forth in "The New Light of Surgery Vindicated From the many unjust Aspersions of some Unknown Calumniators," which was to serve as the means of crushing his enemies and lifting him to the pinnacle of Surgical Science. To this end his work, not being founded on any true scientific basis, failed, but it did serve the purpose of directing the minds of the surgeons toward the question of the care of wounds.



FRONTISPICE OF CHESELDEN'S ANATOMY
HIPPOCRATES FINDS DEMOCRATES DISSECTING A PIG



Cheselden's Anatomy of the Human Body

THE rehabilitation of the teaching of anatomy and surgery in England was due in great measure to William Cheselden. During the seventeenth and early part of the eighteenth century, surgery in England was in a sorry plight. The usual method of training surgeons was by apprenticeships, and when trained, they had difficulty in separating themselves from the barbers. Teaching in London was carried on in St. Bartholomew's and St. Thomas's Hospitals, where the apprentices served seven years and no definite courses were given. The act of 1540, uniting the surgeons and barbers in a single group, which bore the name of "The Barber Surgeons Company," was still in effect. Consequently the laity was unable to make a differentiation between two different classes in the membership which to them were on the same plane and hence indistinguishable. The barbers thus acted as a millstone about the necks of the progressive and ambitious members of the surgical group, for they were constantly overstepping the bounds of their prerogatives and infringing on the field of the surgeons, the upshot being that they, because of their insufficient training and ignorance,

with the consequent bad results, brought the entire profession into disrepute. It was the custom of the barbers to flock to the so called "Anathomies"; watch a few dissections and then, claiming that the proper course of study had been pursued, start in to practice surgery on their own initiative. Finally, realizing that such a procedure was a menace and inimical to the best interests of surgery the Governors of St. Thomas's Hospital took the first step toward putting a stop to it, when, in 1702, they passed a ruling forbidding pupils or surgeons to dissect without the permission of the treasurer, and a year later the number of apprentices to any surgeon was limited to three.

About this time Cheselden who was born at Somerby, Leicestershire, in 1688, appeared on the scene. He first studied under a surgeon in Leicestershire and later under the anatomist William Cowper in London, and the surgeon Fern in St. Thomas's Hospital. In 1718 he was appointed an assistant surgeon at St. Thomas's, and in the following year was promoted to be full surgeon. The statement is made by most of the authorities that the first edition of his *Anatomy of the Human Body* was published in 1713, so in the copy illustrated here, which is the sixth edition, the date MDCCXII (1712), must be a misprint and probably should read MDCCXXII (1722). In the title page, Cheselden does not refer to his connection with St. Thomas's, but describes himself as "Surgeon to his Majesty's Royal Hospital at Chelsea, Fellow of the Royal Society, and Member of the Royal Academy of Surgeons at Paris," the latter, a very high honor for an English surgeon. He was principal surgeon to Queen Caroline, and this may account for his referring to the Chelsea Hospital rather than St. Thomas's, for he did not sever his connection with the latter until 1738. When St. George's Hospital was founded in 1733, he became

one of its surgeons. He died at Bath, England, in 1752, living long enough to see the disassociation of the surgeons and barbers for which he had striven all his life, and which took place according to Act of Parliament in 1745 when the "Masters, Governors, and Commonalty of the Art and Science of Surgeons of London" was incorporated, and it was judged a penal offense for anyone, except members of the College of Physicians who, of course, practiced surgery by proxy, to practice surgery in or within seven miles of London without being duly examined and licensed.

Cheselden began to teach anatomy, and with it surgery, at St. Thomas's in 1720. His book, although entitled *The Anatomy of the Human Body*, is also in great part surgical; for in it he refers constantly to what might be called surgical physiology, and in places refers to surgical operations. One of Cheselden's great triumphs was his operation for an artificial pupil by iridotomy, which he describes as "A knife passed through the tunica scleroris, under the cornea before the iris, in order to cut an artificial pupil where the natural one is clos'd. This operation I have perform'd several times with good success; indeed it cannot fail when the operation is well done, and the eye no otherwise diseas'd, which is more than can be said for couching a cataract. In this operation great care must be taken to hold open the eye lids without pressing upon the eye, for if the aqueous humour is squeez'd out before the incision is made in the iris, the eye grows flaccid and renders the operation difficult." He also describes an operation for excising a portion of a proptosed cornea, and says: "This operation is very useful, and attended with but little pain."

Cheselden's other great success was in cutting for the stone. In this he was supposed to be supreme, and great stories of his

THE
ANATOMY
OF THE
HUMAN BODY.

BY
W. CHESELDEN,
Surgeon to his Majesty's Royal Hospital at CHELSEA
Fellow of the ROYAL SOCIETY
And Member of
The Royal Academy of Surgeons at PARIS

THE VITH EDITION

with FORTY COPPER PLATES
Engrav'd by Ger: Vandergucht.



LONDON.
Printed by WILLIAM BOWYER.
MDCCXII

TITLE PAGE OF CHESELDEN'S ANATOMY
VITH EDITION
NOTE THE CAMERA OBSCURA

exploits in this operation were told. He is said to have removed a stone by lithotomy in fifty-four seconds. He was at first an exponent of the high operation, but later changed to the lateral perineal section, and improved greatly on the method of Frère Jacques. He writes in his anatomy a chapter on the history of cutting for the stone, and in it tabulates his results in both types of operation. In the high operation (suprapubic) he "lost no more than one in seven." In his public practice at St. Thomas's he cites two hundred and thirteen cases of perineal section with a mortality as follows: "of the first fifty only three died; of the second fifty, three; of the third fifty, eight; and of the last sixty-three, six . . . The reason why so few died in the first two fifties was, at that time very few bad cases offer'd; in the third, the operation being in high request, even the most aged and most miserable cases expected to be sav'd by it."

One of the charming points of this sixth edition is the beautiful copper plates engraved by Ger. Vandergucht, some of which are dissections in the poses of famous statues. The frontispiece represents, according to the author, "the story of Hippocrates going to cure Democrates of madness, but finding him dissecting, to discover the seat of the Bile, he pronounced him the wisest man in Abdera."

The advertisement immediately following the table of contents affords an insight into the methods of authors and publishers of the time. Cheselden's Anatomy which had run through four editions in about nine years, if the surmise as to date is correct, was a very popular book but lest the popularity be harmed by the appearance of so frequent new editions the advertisement offers former buyers a concession and at the same time inserts a large paper limited edition in these words:

"This edition having rendered the former editions of little use, and the additions being not fit to be printed alone, I have taken care that the purchasers of the former editions may change their books for the Vth edition on great paper at fourteen shillings a book in sheets, which is four shillings less than the price at shops. Of these there are but two hundred and fifty printed, and are called the Vth edition for distinction sake. A VIth edition on small paper will be published as soon as these are disposed of, and exchanges for them will be allow'd at five shillings and sixpence in sheets which is three and sixpence less than the price at shops. These exchanges will be made at Mr. Cook's, Book-binder at the Bible in Fetter-lane, where they may be had unbound or bound in the best manner."

As the book exists in the small paper sixth edition, to which the copy illustrated here belongs, and ran through many subsequent editions we may judge that the venture in selling the large paper edition succeeded.



The Course in Operative Surgery of Pierre Dionis

WITH the passing of the French surgeons of the latter part of the sixteenth and early part of the seventeenth centuries, particularly Paré, Jacques Guillemeau and Franco, surgery in France retrograded, as it did in some measure in other countries.

The seventeenth century was the hey-day of the physiologist and mathematician. During this period, men like Galileo, Sir Isaac Newton, René Descartes, Pascal, and Francis Bacon, held the center of the scientific stage and offered such competition that surgery was not able, with the materials then at its command, to obtain much public attention though its practitioners, as individuals, were working quietly and accomplishing results which were to aid in the general improvement. In medical science Borelli and the great William Harvey gave their attention to internal medicine and brought forward that side of the medical art so prominently that their followers in France saw their opportunity and promptly took advantage of it. Toward the latter part of the seventeenth century the medical faculty won a victory over the surgeons and obtained a royal decree

A
C O U R S E
O F
Chirurgical Operations,
Demonstrated in the
ROYAL GARDEN
A T
P A R I S.

By Monsieur DIONIS, Chief Chirurgeon
to the late DAUPHINESS, and to the pre-
sent Duchess of BURGUNDY.

Translated from the Paris Edition.

L O N D O N :
Printed for Jacob Tonson, within Gray's-Inn
Gate next Gray's-Inn Lane. 1710.

TITLE PAGE OF THE ENGLISH TRANSLATION OF THE FIRST
FRENCH EDITION OF DIONIS' "COURS D'OPERATIONS"

which united the barbers and surgeons in one corporation. In consequence, the Collège de St.ôme, which had worked constantly for the better education of surgeons, and had, in the middle of the previous century, obtained the privilege of examining candidates for the practice of surgery and so were able to divorce the barbers from the surgeons, lost much of its power. All of these factors made for the temporary innocuous desuetude into which seventeenth century surgery passed.

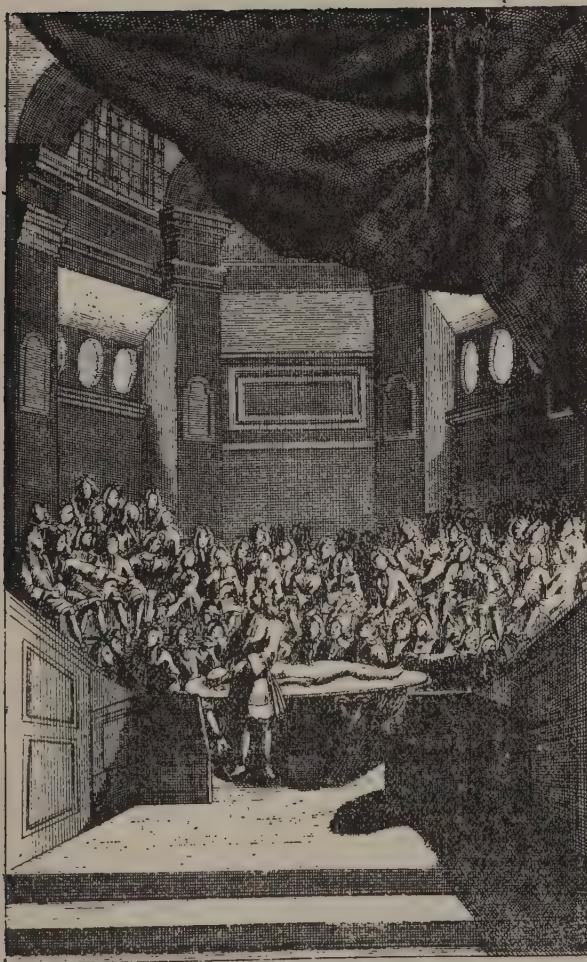
In the middle of the seventeenth century, Pierre Dionis was born and by its third quarter was well on his way toward bringing surgery back into prominence, for he began to teach in 1673. In the introduction to his book he says: "The King, better inform'd than any in his Dominions, of whatever can contribute to the good of his Subjects, by a particular Declaration, which he caused to be verified and registered in his Presence in March, 1673, ordered, that the Demonstrations of Anatomy and Chirurgical Operations shou'd be Annually held in his Royal Garden gratis, and with the Doors open, in order to furnish young Students in Chirurgery with the Means of perfecting themselves in their Art, which his Majesty has always looked on as one of the most necessary in a State." This declaration proved to be of immense importance to surgery, for it marked the beginning of true surgical teaching in France and the starting point of the great French school of surgeons which led the surgery of the world for more than a century. The political play of the medical faculty to unite the barbers and surgeons and thus humiliate the surgeons was answered by increased opportunity for instruction which was now afforded.

Dionis thus received his permission to teach and began to demonstrate anatomy and surgery at the Jardin du Roy. This was not the only result of his efforts in behalf of surgery but it was

found that he had renewed the interest in the science, for at approximately the same time other public teaching courses in surgery were begun at both the Medicinal School and Collège de St. Côme. All of these demonstrations were performed by sworn master surgeons, the others presumably, being Georges Marechal, surgeon of the Charité and first surgeon of Louis XIV, and Jean Nery, first surgeon of the Hôtel Dieu.

Dionis held that the most important subject for a surgeon to have in hand was anatomy. Consequently, the first course was anatomical demonstration on the cadaver. This had to be completed by a student before he could begin surgery. Dionis published his Anatomy, "L'Anatomie de l'homme," in 1690 at Paris, seventeen years before his "Course of Operations." It immediately became one of the most popular medical books of the time and was translated into many other languages, even into Chinese.

The surgical course became so popular that the original provisions of the "Declaration" had to be changed and the course limited, for he says: "For the space of eight Years I have performed those in the Royal Garden, to which the Concourse of Students was so great, that the largest Hall destin'd for them would not hold one half of the Auditors; which obliged us to prepare seal'd Tickets which we distributed to Chirurgeons Apprentices, that they alone might enter, and to avoid confusion by the exclusion of those who were plac'd to serve their time in Barber Shops, and of those whose bare Curiosity drew them thither." So the counter stroke of the surgeons to the medical faculty had succeeded and though legally the barbers still belonged to the same order as the surgeons, practically they were excluded by the only criterion that has ever been found workable, namely, that of educational fitness. Six years



THE AMPHITHEATRE AT ST. COME FROM "A COURSE OF
SURGICAL OPERATIONS" BY DIONIS

after the publication of the first edition of Dionis' "Course" the Collège de St. Côme was merged into the newly formed "Académie de Chirurgie."

If Dionis' teaching ability was equal to his interest as a writer, the above quotation is not overdrawn for his Surgical Work is a delightful book even in the English translation of 1710, illustrated here, in which some of the charm of the original is of necessity lost, as in all translations. The first edition which appeared under the title "Cours D'Operations de Chirurgie, Demontre's au Jardin Royal, par M. Dionis, premier Chirurgien de feuë Madame la Dauphine, à présent de Madame la Duchesse de Bourgogne, & Juré à Paris. A Paris, Chez Laurent D'Houry, rue saint Severin, au St. Esprit, vis-à-vis la rue Zacharie. MDCCVII, avec Approbation et Privilege du Roy." This edition contains a beautiful engraved portrait of Dionis and an epistle to the King of France which does not appear in the English translation. It is also interesting to note that the engraving of the amphitheatre of St. Côme (see illustration) is reversed in the English edition. This is frequently seen in copies of engravings and is due to the fact that the engraver produced the scene on the copper plate as it appeared in the print which was furnished him as a copy. When printed it appears reversed.

Dionis does not confine himself entirely to surgery, for he indulges also in anecdote and history. He tells more clearly than any other author, the story of the notorious Frère Jacques, a contemporary traveling surgeon of no education, but a man who commanded a very large clientele. His historical discussion of the other operation so frequently performed by the itinerant surgeon—herniotomy—is well worth reading, for he gives a discussion of the various types of operation performed

up to his time which is most valuable for the student of the various surgical procedures.

All the operations are described in a systematic manner. First comes the description of what the operation is and close to this text is an engraving of the instruments to be used. For example: "Though Gastrorhaphy be one of the most considerable Operations, 'tis yet only a suture apply'd to Wounds of the Belly: The Word is compounded of two Greek ones, viz. *γαστὴρ*, gaster, which signifies Belly, and *σύριφη*, Suture; and as this kind of Sewing is not only practis'd on the Abdomen, but also on the Stomach and Intestins, 'tis necessary that the Chirurgeon should be instructed on the Wounds which happen to those parts." There follows a discussion of wounds of the abdomen and its contents, with their symptoms and finally the technical details of the operation to be done.

The book is divided into ten demonstrations including all the operations then known. Accompanied as they were by the demonstration of the operation on the cadaver, it is easy to see the reason for the popularity of the course, and why the book retained its standing as a great surgical text book for over a hundred years.

Index

- A**BSCESS, drainage of, 207
opening of, 136
Abstractum Chirurgiae Marinae, 229
Adams, Francis, 18
Adenitis, 20
Aemilius Macer, 105
Aesculapius, 3
Aetius of Amida, 7
Albertus Pius, 69
Albucasis, 17, 59
Cautery, 24
Surgery of, 23
Aldine Edition of The Ancient Works of the Medical Writers, 2, 103
Aldine Press, 104
Aldus, 133
Alexander of Tralles, 7
The Twelve Books of Medicine of, 11
Alexandria, 19
Alexandrian Library, Foundation of, 1
School, Foundation of, 1
Alkawabeli, 18
Almaleki, 28
Altasrif, 23
Ambrose, Earl of Warwick, 216
Amputation of Artery, 30
of Extremity, 25
first illustration of, 63
intra-uterine, 85
ligature in, 120
Amulets, 164
Anaesthesia, 136
Method of Hugo of Lucca, 64
Vinegar in, 64
Anatomy, Banister, 209
Cheselden, William, 241
Anatomy, Dionis, 250
Ignorance of, 210
The; of Realodus Columbus, 177
Vicary, 195
Aneurysm, Abdominal, 115
Antyllus operation, 9
Animal mummy, 95
Anomalies, Congenital, 85, 180
Anthrax, 66
Antonius Musa, 105
Antyllus, 9, 31
Apollo, 3
Apology, Paré, 119
Apparatus Major, 87, 160
Appliances, prosthetic, 121
Apuleus, L., of Madaura, 105
Arabian School, 28
Arderne, John, 193
The Surgery of, 53
Aristotle, 1, 145
Arrow, poisoned, 143
Asolini, The, 104
Astrology, 165
Augendienst, The, 163
Averroes, 145
Avicenna, 29, 57
burning of works of, 94
BANDAGING, 100
Banister, John, 103, 209
Barber Surgeons, 59, 215
Barber Surgeons Company, 194, 241
Barbers of London, 193
Bartisch, George; The Augendienst of, 163
Bartisch, Tobias, 166
Basel, University of, 93
Bathes, English, 196

Index

- Bayly, Edward, 195
 Benedetti, 160
 of Legnago, 169
 Berengarius of Carpi, 67, 146
 Concerning fractures of the skull, 67
 Berthanus, 38
 Beton, Will, 195
 Bevilaqua, Nicolas, 179
 Beyer, Joh. Hartmann, 189
 Binonus, Gaspar, 170
 Birth Figures, 80
 Black Death, The, 54
 Bleeding, 9, 14, 30
 Galenic Method, 145
 Hippocratic Method, 145
 Method of Arabians, 145
 Roger of Salerno, 45
 Blindness as punishment for sin, 163
 Bloody Flix, or Dyenterie of Guillemeau, 141
 Boiling oil, 119
 Boleyn, Anne, 77
 Bollifant, Edm., 217
 Bologna, Professorship, 70
 University of, 47, 87
 Book of Hours, 156
 Borgarutius, Prospero, 114
 Botallo, Leonardo; The Cure of Gunshot Wounds, 143
 Branca family, 169
 Bremer, W., 196
 Brissot, Pierre, 145
 Bronchocele, 190
 Brunschwig, Hieronymus, 96
 The Surgery of, 57
 Brunus, 57
 Lithotomy position, 159
 Bullein, William; Bulwarke of Defense and Dialogue, 203
 Burning of Works of Galen and Avicenna, 94
- Byrth of Mankynde, The, 74, 77
 Byzantine Period, 7
- C**AELIUS AURELIANUS, 105
 Caius Plinius Secundus, 105
 Calculi, 180
 Cancer, 24
 Capello, Francesco of Modena, 170
 Carbuncle, 66
 Cardan, Jerome, 170
 Cards, Lithotomy, 155
 Caries, 120
 Casserio, Giulio, 189
 Cataract operation, 123
 Catherine of Aragon, 77
 Cautery, 19, 64, 119
 Indications for, 24
 Cellini, Buenvenuto, 70, 97, 150
 Celsius, Aurelius Cornelius, 105
 Method of Lithotomy, 159
 Certaine Workes of Chirurgerie, 199
 Chair, Obstetrical, 80
 Changelings, 85
 Charaka, 169
 Charlatans, 206
 Charles V, 195
 Charles IX, 139, 144
 Cheselden, William; Anatomy of, 241
 Chirurgerie, Certain Works of; Thomas Gale, 199
 Chirurgia e Graeco in Latinum Conversa, by Vidus Vidius, 100
 Chirurgicus, origin of name, 65
 Christianismi Restitutio, 226
 Christ's Hospital, 216
 Chyrurgery, A Discourse of the Whole Art of; Peter Lowe, 219
 Circulation, lesser, 181
 Circulation of the Blood, William Harvey, 225
 Classifications of Surgical Diseases, Gale, 200

- Clowes, William, 103, 195
The Gunpowder Surgery of, 215
- Cocchi, Ant., 2
- Colbatch, Johan; New Light of
Surgery, 235
- Colines, Simon de, 184
- Collectanea Medicinalia, 8
- Collected Works of the Ancient
Medical Writers, Aldine Edi-
tion, 103
- Collectio Chirurgica Veneta, 40, 50
- Collège de St. Côme, 53, 66, 87
Loss of Power of, 249
- College of Physicians, 243
- College of Surgeons, 139
- Collegium Hippocraticum, 33
- Colot family, 89, 155, 160
- Columbus, Realdus; The Anatomy
of, 177
- Concerning Medical Matters, 105
- Concerning the Virtues of Plants, 105
- Constantinus Africanus, 29, 33, 37
- Consultation, Value of, 59
- Cordus, Euricius, 211
- Cornarius, Janus, 18
- Cosimo I, 100
- Cosmas, Indicopleustus, 12
- Costa Ben Luca, 44
- Coulombel, Robert, 133
- Cours D'Operations de Chirurgie,
161, 252
- Cowper, William, 242
- Croesus, 11
- Crusades, Influence of, 46
- DALECHAMPS, JACQUES: French Sur-
gery of, 127
- Dalla Croce, Giovanni Andrea; The
Surgery of, 147
- Dalla Croce, 199
- Danes, Pierre, 184
- da Villa, Ottavinano, 160
- Dawson, M., 217
- Dawson, Thomas, 217
- Daye, John, 211
- de Beaulieu, Frère Jacques, 155, 161
- Debridement, 135
- de Brissac, 117
- de Capella, Michael, 29
- De Conceptu et Generatione hominis,
84
- De corporis humani fabrica, 80, 177
- de Medici, Catherine, 144
Cosimo, 173
Giovanni, 173
Lorenzo, 69
- de Mondeville, Henri, 54, 87
- De Motu Cordis, 226
- De Partu Hominis, 79
- Der grossen Wundartzney, 95
- De Renzi, 34
- de Romanis, Giovanni, 89, 160
- Desiderius, 37
- de Vigo, John, 70, 143, 145
Origin of name, 89
The Surgery of, 87
Translation of, 199
- D'Houry, Laurent, 161, 252
- Dictionary, Medical; of Stephanus,
183
- Dionis, Pierre, 161
The Course in Operative Surgery,
247
- Dioscordes, 28, 145
- di Rapallo, Batissta, 87, 160
- Directorie, The Surgions; Vicary, 193
- Discourse of the Whole Art of
Chyrurgery, A; Peter Lowe, 219
- Diseases of Women, The; Trotula,
33
- Dislocation of Shoulder, Reduction
of, 25
- Duct of Bottallo, 144
- Duke of Ferrari, 100

Index

- E**DWARD III, 54
 Edward IV, 194
 Edward VI, 79
Ein schön lustig Trostbüchle, 83
Emplastrum de Vigo, 91
Empyema, 19, 115
Enchiridion of Chirurgerie, 200
Epilepsy, 51
Epulis, 141
Ergotism, 66
 Estienne, Henri, 183
 Evelyn, John, 154
Experimentation, Animal, 238
Extraction of teeth, 19
- F**ABRI OF HILDEN, 124
 Fabricius of Acquapendente, 187
 Faculty of Physicians and Surgeons
 of Glasgow, 222
 Fallopius, Gabriel, 69, 144
 Fat, puppy dog, 119
 Fawcet, T., 195
 Fellowship of Surgeons, 216
 Fermel, Jean, 116
 Ferrara, 70
 Ferri, Alphonso, 143, 145
 Ferris, Richard, 200
 Fetus, position of, 75
 Fever, Tertian, 91
 Field Book of the Treatment of
 Wounds, 63
 Field, John, 200
 Field Workers in Surgery, 107
 Fistula, 66
 Fistula in ano, 55
 Fitzerus, William, 227
 Follat, Francis, 100
 Foramina in base of skull, 171
 Forceps, Obstetrical, 85
 Wound, 120
 Foreign bodies, ablation of, 135
 removal of, 19
- Foreign Bodies, technique of withdrawal, 117
 Forli, Castle of, 173
 Four Masters, 41
 Fracture by contre coup, 71
 nomenclature of, 71
 of the skull, 50, 67
 treatment by machines, 100
 Francis I, 99, 110, 134
 Francis Duke of Alençon, 144
 Franco, Pierre; *Surgery of Hernia*,
 123
 Two stage Lithotomy, 160
 Frederick II; *Ordinance of*, 47
 French *Surgery of Dalechamps*, 127
 of Guillemeau, 137
 Frenum cesaris, 56
 Frère Jacques, 252
 Fugger, Huldrich, 185
- G**ADDESDEN, JOHN OF, 53
 Gale, Thomas, 103
 Certaine Workes of Chirurgerie of,
 199
 Galen, 1, 7, 8, 9, 57, 109, 145
 burning of works, 94
 Galterius, Petrus, 100
 Gangrene, 120
 Gastrorhaphy, 253
 General History of Plants, 129
 Gerhard of Cremona, 25
 Gilbertus Anglicus, 53
 Goiter, 20
 Iodine in, 46
 Operation for, 46
 Occurrence in Switzerland, 190
 Golden Age of Grecian Medicine, 1
 Gouffier, Seigneur Francois, 134
 Gourmelen, Etienne, 104, 119
 Government of Health, The, 203
 Gruninger, Johann, 59
 Guido Guidi, 150

- Guido Guidi, The Surgery of, 97
Guiliano della Rovere, Cardinal, 89
Guillemeau, Jacques; The French
Surgery of, 137
Gainter, John; of Andernach, 12, 18,
116
Gunpowder Surgery, William
Clowes, 215
Gunshot Wounds, The Cure of,
Botallo, 143
Gutenberg, 156
Guy de Chauliac, 17, 41, 64, 87, 109
Opinion on Hernia, 125
Gwydo, 57
Gymnastics in Medicine, 176
- H**ADRIAN, 2
Haemorrhage, 20
Haemostasis, 64
by Cautery, 24
Hall, John, 202
Haly Abbas, 57
Royal Book of, 27
Hare Lip, 141
Harvey, William, 187
Circulation of the Blood, 225
Henry III, 139, 144
Henry IV, 139
Henry V, 135
Henry VIII, 77, 193
Hernia, 19, 24, 111
Castration in, 125
sac of, 124
Surgery of; Pierre Franco, 123
Hilton, William, 203
Hippocrates, 1, 57, 109
Oath, 223
Presages of Divine; Lowe, 223
Historie of Man, The; Banister, 211
Hock, Wendelin, 65
Hodgkinsonne, R., 222
Hollerius, Jacob, 110
- Holmes, Oliver Wendell; Puerperal
Sepsis, 76
Honéin Ben Ishak, 17
Hudibras, 170
Hugo of Lucca, 64
Hunter, John, 144, 233
Hysterectomy, 4
- I**AMERICUS, 57
Iatro Chemical School, 96
Iatro Mechanical School, 96
Ignis Sacer, 66
Incantations, 164
Inflammation, Lung, 14
Pleura, 14
Institution of a Chirurgeon, An, 200
Instruments, Surgical; Ornamenta-
tion of, 149
Iridotomy, 243
Isaac Judeaus, 41
Ishak Ben Soleiman, 44
- J**AQUES, FRÈRE, 155, 161
James IV, 222
Jerome of Brunswick, 57, 63
Joannitius, 17
Jonas, Richard, 79, 83
Julian the Apostate, 7
Julius II, Pope, 89
- K**EBLE, GEORGE, 215
King Francis I, 99, 110, 134
- L**A CHIRURGIE FRANCOISE, 139
Lanfrancus of Milan, 53, 57, 87
Suture of Lithotomy Wound, 159
Leicester, Earl of, 209
Leonides of Alexandria, 20
Lesion, illustration of surgical, 55
Letter to Primrose and Harvie, 222
Ligature, 20, 60, 119, 190
use of, 30

Index

- Lievre, Esaie le, 133
 Limning, 156
 Litholopaxy, 159
 Lithotomy, 19, 25, 87, 89, 123, 245
 After treatment of, 30
 and the Lithotomists, 153
 apparatus major, 160
 danger of sterility in, 160
 median perineal, 160
 method of Celsus, 159
 Perineal, 160
 position, 159
 results of, 245
 suprapubic, on a child, 126
 suture of wound, 159
 two stage operation, 160
 Locatellus, Bonetus, 24
 Lorenzo the Magnificent, 67
 Louis XIV, 250
 Lowe, Peter, 103
 A Discourse of the Whole Art of
 Chyrurgery, 219
 Ludovico de Saluzzo, 89
 Luther, Martin, 85
 Luzzo, Pietro, 147
 Lyons, University of, 127
- M**AISTER PIERPONT, 200
 Maggi, Bartolomeo, 97
 Malacorona, Rodolpho, 35
 Malpighi, Marcello, 228
 Mania, 51
 Manual Operations of Guillemeau,
 141
 Manutius, Aldus, 104
 Paulus, 104
 Marcellus, 105
 Marechal, Georges, 250
 Mariano Santo di Barletta, 89
 Marshe, Thomas, 205
 Masks for squint, 165
 Masters, Governors, and Common-
- alty of the Art and Science of
 Surgeons of London, 243
 Maximilian II, Emperor, 174
 Mercurialis, Hieronymus, 169
 Six books of, 173
 Messina, University of, 47
 Midwives' Book, 84
 Mondalfo, Storming of, 69
 Monsters, 85
 Monte Cassino, 37
 Montpellier, University of, 47, 87
 Moyle, John; An Abstract of Sea
 Surgery, 229
 Mundinus, 69
- N**APLES, UNIVERSITY OF, 47
 Needful, New and Necessaire treatise
 of chyrurgerie, A; Banister, 210
 Nery, Jean, 250
 New Light of Surgery, John Col-
 batch, 235
 Niketas, Collection of, 2
 Nuthall, F., 195
- O**ATH, Hippocratic, 223
 Obstetrics, 4, 73
 Booklet, The; of Rueff, 83
 Forceps, 85
 and Gynecology, 34
 Sixteenth Century, 83
 Officin et Jardin de Chirurgie
 Militaire, 134
 Opera Ysaac, 41
 Opium for anaesthesia, 64
 Oribasius of Sardis, 7
 Ornamentation of Surgical Instru-
 ments, 149
 Ottaviana da Villa, 89
 Oxford, University of, 47
- P**ADUA, UNIVERSITY OF, 47, 87
 Pantegneum, 29, 40

Paracelsus, 103
The Great Wound Surgery of, 93
Paré, 97, 103, 127, 137, 199
Recommendation of Colot, 155
Ten Books of Surgery, 117
Paris, University of, 47, 87
Paul IV, Pope, 179
Paulus of Aegina, 7
The Collection of the Pleiades, 17
Operation for Goiter, 20
Operation for Tonsillectomy, 20
Paumgartner, Eberhard, 93
Pavia, University of, 47
Pediatrics, 76
Pentateuch and Operation of Surgery, Fabricius, 187
Pepys, Samuel, 154
Pergamus, 7
Perineorrhaphy, 35
Pestilence, 66
Petrarch, Handwriting of, 104
Petrus, Henricus, 40
Pharmacopoeia and Garden of Military Surgery, The, 133
Philip, King of Spain, 113
Picardy, 135
Pilgrim, Hans, 63
Pius IV, Pope, 174
Placentinus, 57
Platearius, John, 35
Plato, 4
Plazzi, Giovanni Antonio, 179
Point doré, 126
Polypi, Nasal, 19
Post Mundi Fabricam, 43
Powder, haemostatic, 200
Practica Chirurgiae of Roger, 43
Presages of Divine Hippocrates, Lowe, 223
Press, Stephanus, 184
Printing, invention of, from movable type, 156

Profitable and Necessaire Booke of Observations, A, 216
Prognostication of Sex, 35
Prooved practise for all young Chirurgians, 216
Pterygium, 19
QUEEN CAROLINE, 242
Queen Elizabeth, 194
Queen Mary, 194
RAMAYANA, The, 157
Ranula, 25, 141
Rapallo, Cardinal, 110
Raynalde, Thomas, 74, 79
Raynold, Thomas, 83
Reduction of fractures and dislocations, 19
Retained foreign body, Case of, 218
Rhasis, 12, 17
Rhodion, Obstetrics, 74
Richardson, J., 229
Rihelius, Wendelin, 18
Ring, lancet, 136
Rodolpho, Cardinal, 97
Roesslin, Eucharius, 83
Rosegarden of, 73
Roger, 57
Roger of Salerno, 43
Rogerius, Joannus Nicholaus, 45
Roland of Parma, 44, 49
Rosarius, John Baptist, 8
Rosegarden for Pregnant Women and Midwives, 73
Origin of name, 74
Roville, Guillaume, 129
Royal College of Physicians, 226
Royal College of Surgeons of Edinburgh, 215
Royal Garden, 250
Rufus of Ephesus, 9
Perineal Lithotomy, 160

Index

- St. ANTHONY's Fire, 66
 St. Bartholomew's Hospital, 194
 St. Benedict, Four Books on the Miraculous cures of, 37
 St. Cosmus, 66
 St. Damianus, 66
 Santo di Barletta, Mariano, 160
 Salerno, School of, 33
 Scheyt, Mattaeus, 93
 School of Salerno, waning of, 87
 Schott, Joann, 63
 Schylhans, 63
 Scotus, Jerome, 12
 Scotus, Oct., 24
 Scuola Medici di Salerno, 34
 Scribonius Largus, 105
 Sea Chest, Filling of, 231
 Sea Surgery, An Abstract of; John Moyle, 229
 Semmelweiss, Puerperal Sepsis, 76
 Servetus, 225
 Setons, 141
 Seven Books of Surgery, Dalla Croce, 149
 Seymour, Jane, 79
 Sforza, Catherine, 173
 Skeleton, Franco, 124
 illustration of, 111
 The Waechtelin, 65
 Soranus of Ephesus, 1, 80, 105
 Soranus-moschion Codices, 73, 80
 Sorenus, Quintus, 105
 Spectacles, 165
 Speculum, Trivalve, 65
 Splints, 19
 Squint, masks for, 165
 Stempanus, Jacobus Hollerius, 111
 Stephanus of Antioch, 29
 Stephanus, Henricus; The Medical Dictionary of, 183
 Stephen of Edessa, 11
 Sterility, danger of; in Lithotomy, 160
 Steyner, Heinrich, 95
 Stone in Urinary tract, 14
 Story, Richard, 195
 Strabus, Gallus, 105
 Stromayr, Caspar, 125
 Surgeons, Itinerant, 123
 Surgeons of London, 194
 Surgeons, non combatant, 216
 Surgeon, Requirements of; Bullein, 206
 Surgery, An Abstract of Sea; John Moyle, 229
 course in operative; Dionis, 247
 French of Daleschamps, 127
 French of Guillemeau, 137
 French, Rise of, 87
 of Giovanni Andrea Dalla Croce, 147
 of Guido Guidi, 97
 Gun powder, The: William Clowes, 215
 Hindu, 169
 of Jean Tagault, 107
 of John de Vigo, 87
 New Light of; Johan Colbatch, 235
 Origin of name, 65
 Pentateuch and operations of; Fabricius, 187
 Pharmacopoeia and Garden of Military, 133
 Plastic of Tagliacozzi, 167
 Seven Books of; Vesalius, 113
 Subordination to Medicine, 130
 Ten Books of, The; Ambroise Pare, 117
 The Great Wound; Paracelsus, 93
 Surgical Savants, 107
 Surgeons Directorie, The; Thomas Vicary, 193
 Susruta, 169
 Suture, Intestinal, 25

- Sydenham Society, 18
Sylvius, Jacobus, 116
Syphilis, 91, 167
- T**AGAULT, JEAN, 99, 116
The Surgery of, 107
Tagliacozzi Caspar, 103
Plastic Surgery of, 167
Taliacotius, 169
Testis, Removal of, 125
Theodoric, 64
Theodorus Pricianus, 106
Therapia Sterilans Magna, Search for, 135
Tonsillectomy, Paulus' operation, 20
Tonsillotomy, 19
Torinus, Albanus, 18
Trachoma, 25
Tracie, Rycharde, 90
Traheron, Bartholomew, 90
Trajan, 2
Trepan, Crown, Introduction of, 90
Trehphining, 69
Treveris, Peter, 59
Trotula, 105
Diseases of Women, 33
Tubes, drainage, 120
Tumors, 110
Turner, D., 196
Type, Invention of movable, 156
- U**LCEER, Chronic of leg, 95
Urbino, Duke of, 69
Uterus, prolapse of, 4
ulcerated, 4
Uvula, Removal of tip of, 141
- V**ALGRISIUS, 114
Varicocele, 111
Varicose veins, excision of, 95
Vasari, 70
- Veins, Function of Valves, 228
Venesection, 9
Vernacular, writing in, 131
Version, 4
Cephalic, 75
Podalic, 75
Vesalius, 69, 80
Origin of name, 115
The Seven Books of Surgery of, 115
Vicary, Thomas, 193
Vidian Nerve and Canal, 101
Vidus Vidius, 97, 110
Vinegar to terminate anaesthesia, 64
von Gersdorff, Hans; Field Book of Surgery of, 63
- W**AECHTELIN, 63
Warwick, Earl of, 209
Weapon Salve, 96
Wechel, Christian, 109
Whole Course of Surgerie, The, 221
Whytchurch, Edward, 90
William of Salicet, 57
Witing of Wesalia, 116
Wound man, 65
Wounds, dead spaces in, 61
Field Book of the treatment of, 63
Gunshot; Cure of, Botallo, 143
Gunshot; First account, 60
of head, 50
lacing of, 150
poisoned by gunpowder, Controversy over, 143
suppuration in, 61
Surgery, The great; of Parcelsus, 93
Suture of, 60
Woman's Stoole, The, 80
Women of Salerno, 34
- Z**ENO OF CYPRUS, 7
Ziletti, Giordano, 149

